New Hampshire CHIS comprehensive health care information system

Children in Out-of-Home Placement in New Hampshire

Health Status, Utilization, Payments, and Preventive Visits, State Fiscal Year 2007

A report prepared for the
New Hampshire Department of Health and Human Services
by the
Maine Health Information Center

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About the New Hampshire Comprehensive Health Care Information System

The New Hampshire Comprehensive Health Care Information System (NH CHIS) is a joint project between the New Hampshire Department of Health and Human Services (NH DHHS) and the New Hampshire Insurance Department (NHID). The NH CHIS was created by state statute (RSA 420-G:11-a) to make health care data "available as a resource for insurers, employers, providers, purchasers of health care, and state agencies to continuously review health care utilization, expenditures, and performance in New Hampshire and to enhance the ability of New Hampshire consumers and employers to make informed and cost-effective health care choices."

For more information about the NH CHIS, please visit http://www.nh.gov/nhchis, www.nhchis.org, or contact Andrew Chalsma, NH DHHS, achalsma@dhhs.state.nh.us.

About the Study

This study was conducted by the Maine Health Information Center (MHIC) under a contract with the State of New Hampshire Department of Health and Human Services, Office of Medicaid Business and Policy, titled New Hampshire Comprehensive Health Care Information System. The views expressed are those of the authors and do not necessarily represent the views of the MHIC or the New Hampshire DHHS. For more information on the study, contact Karl Finison, Director of Research, Maine Health Information Center, 207-430-0632, kfinison@mhic.org.

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EXECUTIVE SUMMARY

This study evaluated a variety of health care measures to compare children in out-of-home placement to other low-income children enrolled in New Hampshire Medicaid during State Fiscal Year (SFY) 2007. The Maine Health Information Center used information provided by the New Hampshire Department of Health and Human Services, Division for Children, Youth, and Families (DCYF) and New Hampshire Medicaid administrative eligibility and claims data from services incurred in SFY2007 to study the following:

- out-of-home spell history and number of placements;
- access to primary care practitioners and preventive visits;
- disease prevalence;
- use of inpatient, outpatient emergency department, office-clinic, prescription drugs, and dental services;
- mental health disorders and psychotropic medication use; and
- payment rates per member per month.

Key Findings:

Study Populations and Out-of-Home Placement History

- For SFY2007, 262 children in residential placement, 1,082 in family foster care, and 71,319 in the low-income Medicaid comparison group were studied.*

- Children in residential placement were more likely to be adolescents (78%), compared with children in family foster care (37%) or the low-income comparison group (34%).

- Adjusting for age, gender, and total duration in out-of-home placement, children in residential placement were 2.4 times more likely to have four or more placements compared with children in family foster care†

Access to Primary Care Practitioners and Preventive Visits

- The primary care practitioner access rate for adolescent children 12-18 years of age in residential placement (97.5%) and family foster care (96.1%) was higher than the NH Medicaid low-income comparison group (90.1%), the national Medicaid managed care rate (83.2%), and the national commercial managed care rate (89.2%).

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* Residential placement includes children in group homes and more intensive residential facilities. Family foster care includes children placed with relatives or in non-relative foster homes. Children placed through the Division for Juvenile Justice were not included in this study.

† Changes in placement sometimes reflect efforts to achieve case-plan goals and may in fact be in the best interest of the child. Examples include moves from a more restrictive to less restrictive setting, moves from a non-relative to a relative home, a move to an adoptive home, moves to be placed with siblings, and moves that bring a child closer to family and community.

- The rate of adolescent well-care preventive visits for children in residential placement (67.2%) and family foster care (70.2%) was significantly higher than the NH low-income Medicaid comparison group (51.1%), the national Medicaid managed care rate (43.6%), or the national commercial managed care rate (40.3%).

Disease Prevalence

- Compared to the low-income Medicaid comparison group, children in out-of-home placement had higher prevalence of nutritional or metabolic disorders, mental health disorders and mental retardation, epilepsy, convulsions, blindness and vision problems, and congenital anomalies.

- Children in residential placement had higher prevalence of digestive and genito-urinary conditions, skin problems, musculoskeletal disorders, abdominal pain, and injuries.

- The overall disease burden as measured using the 3M™ Clinical Risk Group (CRG) software was higher in the residential placement group (risk weight 2.26) compared with family foster care (1.17) or the low-income comparison group (0.50).

- Regardless of age, children in residential placement had 4 times the relative disease burden, and children in family foster care had 2 times the relative disease burden compared with children in the low-income comparison group.

Utilization of Services

- The rate of inpatient hospitalization was higher in children in residential placement (259 per 1,000 members) and family foster care (66 per 1,000 members) than the low-income comparison group (27 per 1,000 members). This pattern was consistent over all age groups and by gender. Mental health disorders accounted for 64 (50%) of the 129 inpatient hospitalizations for children in out-of-home placement.

- The rate of outpatient emergency department visits was higher in children in residential placement (1,358 per 1,000 members) and family foster care (657 per 1,000 members) than the low-income comparison group (560 per 1,000 members).

- Injuries (338), respiratory illnesses (148), and mental health disorders (117) accounted for 61 percent of the total (992) outpatient emergency department visits incurred by children in out-of-home placement.

- The rate of prescription drug use for children in residential placement (777 days supply per member per year) was three times the rate for children in family foster care (270 days supply per member per year) and seven times the

rate for the low-income comparison group (113 days supply per member per year).

- For each of the major drug therapeutic categories (antiasthmatics, antihistamines, antibiotics, cardiovascular, anticonvulsants, antidepressants, tranquilizers, stimulants, anxiolytics, gastrointestinals, oral contraceptives, and skin agents), the rate of days supplied per member per year was highest in children in residential placement, lower in children in family foster care, and lowest in the low-income comparison group.

- The rate of use of dental services in children in residential placement (2,820 services per 1,000 members) was higher than children in family foster care (1,979 per 1,000) and the low-income comparison group (1,427 per 1,000).

Prevalence of Mental Health Disorders and Psychotropic Medication Use

- The prevalence of any mental health disorder among adolescents in residential placement (90%) and family foster care (82%) was significantly higher than adolescents in the low-income comparison group (28%).

- While the rate of major depression was similar between the residential placement group (6%) and the family foster care group (5%), the prevalence of bipolar and other affective disorders was four times higher in the residential placement group (26%) compared with the family foster care group (6%).

- The rate of psychotherapy visits was significantly higher for children with mental health disorders in residential placement (11,406 per 1,000 members) or family foster care (11,893 per 1,000) compared to the low-income Medicaid comparison group (6,181 per 1,000).*

- Children with a serious mental health disorder and any psychotropic medication use had more intensive medication use in residential placement (531 days per year) than children in family foster care (465 days per year) or the low-income comparison group (366 days per year).

Payments Per Member Per Month

- After removing services unique to special Medicaid populations, the payment rate for children in residential placement ($807 PMPM) was more than double the payment rate for children in family foster care ($369 PMPM) and more than five times the payment rate for the low-income comparison group ($142 PMPM).

Limitations: The residential placement population studied was small (262) and the resulting rates for that group of children in out-of-home placement would be subject to less statistical precision. This study is based primarily on administrative claims

* Due to bundled claim billing practices, the rate of psychotherapy visits in the residential placement group may be under-reported.

data. Administrative claims data is collected primarily for the purpose of making financial payments. Specific provider, diagnosis, and procedure coding are typically required as part of the financial payment process. The use of claims data is an efficient and less costly method to report on health care utilization and payments than other methods such as surveys or patient chart audits. Administrative claims data may under-report some diagnostic conditions or services; however, some studies indicate that administrative claims data may provide a more accurate rate than medical chart review.

Conclusion and Next Steps: NH children in out-of-home placement had higher rates of disease, mental health disorders, utilization, and payment rates compared with other low-income children covered by Medicaid. The out-of-home placement group did have higher rates of well-child preventive visits than the comparison low-income group and national managed care rates but the rates decline with age and about one-third of adolescents in out-of-home placement did not have a well-child preventive visit. Mental health disorders were a major driver for children in out-of-home placement with significantly higher rates in the residential placement group. There was some evidence that children in out-of-home placement had more intensive psychotropic medication use, but this might be driven by multiple coexisting mental health disorders. Children in out-of-home placement frequently had multiple placements, which other studies suggest may be predictive of increased prevalence of mental health disorder.

Additional value could be gained from further study of:

- children with no preventive well-child visit;
- impact of number of placements on utilization and prevalence of mental health disorders;
- coexisting mental health disorders; and,
- use of multiple psychotropic medications among children in out-of-home placement.

INTRODUCTION

A report by the Urban Institute indicated that:

> *Each year more than 800,000 children in the United States spend time in foster care as a result of abuse and neglect. States disburse about $10 billion a year in federal and state funds to meet the needs of children placed in foster care. Foster children are at particularly high risk for physical and mental health problems stemming from not only the maltreatment they have experienced but also the separation from their homes and families, and the continuing disruptions to their daily lives.*[1]

The Urban Institute report indicated substantial variability between states in foster care Medicaid expenditures, and New Hampshire ranked third highest in spending per enrollee (Maine and Vermont were highest). Based on cost alone, an evaluation of children in out-of-home placement is useful.

According to the American Academy of Pediatrics:

> *Greater numbers of young children with complicated, serious physical health, mental health, or developmental problems are entering foster care during the early years when brain growth is most active.*[2]

Although numerous studies have indicated that children in out-of-home placement have more serious and chronic medical, mental health, and developmental problems than other children receiving Medicaid services, research has shown that these problems are not always identified or treated.[3,4,5,6 A] A high proportion of children in out-of-home placement have experienced significant abuse and other adverse events. Results of the Adverse Childhood Experiences (ACE) study have demonstrated that health risk behavior and poor health status of adults are associated with abuse and other adverse experiences during childhood.[7,8]

Approximately 120,000 children are adopted each year in the United States.[9] Children with physical, developmental, or emotional handicaps who were once considered unadoptable are now being adopted ("special needs adoptions").

The Division for Children, Youth, and Families (DCYF) in the New Hampshire Department of Health and Human Services provides services and support for New Hampshire children who are in out-of-home placement or adopted through DCYF.[10] The Foster Care Health Program is designed to meet the health care needs of every child in out-of-home placement. All children in out-of-home placements through DCYF receive the on-going care they need to achieve and maintain optimal physical, emotional, and developmental health. The Adoption Program provides an array of services to families who adopt children through DCYF including case management, education, information and referral, financial assistance, support groups, and assistance to adoptees searching for their birth families.

A study of New Hampshire's children in out-of-home placement was conducted by researchers at the Family Research Laboratory and Crimes Against Children Research Center at the University of New Hampshire (UNH). The study utilized Medicaid data (1999), interviews with DCYF nurses, group home providers, and a survey of foster parents (2005).[11] The study utilized Medicaid data to report on enrollment and claim expenditures but relied upon parent-reported survey data to evaluate developmental delays, physical and mental problems, and medication use.

This NH CHIS study will use more current (SFY2007) administrative Medicaid enrollment and claims data to evaluate in greater detail health status, utilization of services, preventive visits, and payments for children in out-of-home placement. In addition, this study will compare children in out-of-home placement with other low-income children covered by Medicaid.

Overview and Purpose of Report

The NH CHIS annual report on children's health insurance in New Hampshire identified significantly higher payments per member covered in Medicaid compared with SCHIP or CHIS commercial health plans.[12] Within Medicaid, children enrolled in out-of-home placement, adoption, and juvenile justice eligibility categories had payment per member rates that were significantly higher than other low-income children covered by Medicaid.

The current report was developed by the Maine Health Information Center and the New Hampshire Department of Health and Human Services, Office of Medicaid Business and Policy in collaboration with the New Hampshire Department of Health and Human Services, Division for Children, Youth, and Families.

The purpose of the study was to utilize Medicaid administrative enrollment and claims data to describe the New Hampshire children in out-of-home placement and make comparisons to other low-income children covered by NH Medicaid. Using the administrative claims data; health status, mental health disorders, utilization, payments, and use of medications were evaluated. Access to primary care and well-child preventive visit rates were compared using Healthcare Effectiveness Data and Information Set (HEDIS) measures based on the administrative claims data submitted.*

The scope of the study was to:

- compare children in residential placement with children in family foster care, and other low-income children enrolled in Medicaid;
- describe out-of-home placement population by age and gender;
- describe length of time in out-of-home placement, number of spells, and placements;

* HEDIS is a tool used by most health plans to measure performance with regards to effectiveness, access, use, satisfaction, and cost of care. National Committee for Quality Assurance (NCQA) is the independent non-profit organization that maintains the tool.

- describe health status of children in out-of-home placement;
- compare rates of access to primary care practitioners and well-child preventive visits;
- compare rates of emergency department, office-clinic, and inpatient use;
- describe and compare prevalence and utilization rates of mental health disorders;
- describe psychotropic medication use for children with mental health disorders;
- compare rates of use of dental services;
- compare rates of payments per member per month by category of service.

Data Sources and Methods

This study was based on administrative eligibility and claims data from New Hampshire Medicaid for the SFY2007 (state fiscal year July 2006-June 2007). For the NCQA HEDIS access to primary care practitioner measure, a two-year window was required (July 2005-June 2007).

Children in out-of-home placement were identified by NH DCYF which also provided information on type of placement (residential or family foster care), length of time in out-of-home placement, and number of placements. Exclusions were made from both the out-of-home placement and low-income Medicaid groups to improve validity of rate comparisons. Children in out-of-home placement were assigned to "residential placement" and "family foster care" study groups based on the child's primary placement during the last spell (period) of out-of-home placement provided by DCYF.

The methods used in this study are described in Appendix 1 at the end of the report.

Population Studied in the Report

The SFY2007 experience of three New Hampshire populations was studied: children in residential placement enrolled in Medicaid, children in family foster care enrolled in Medicaid, and children enrolled in low-income Medicaid eligibility groups. Children with severe disabilities (i.e., in the home care for children with severe disabilities and aid to needy blind eligibility categories) were excluded from this study. Infants under the age of one and children over age 18 were excluded. Children in out-of-home placement with missing/invalid Medicaid IDs, enrolled in SCHIP, or with placement type unknown were also excluded. In total, 144 (10%) of the 1,488 children in out-of-home placement during SFY2007 were excluded from the study.

The same exclusions were made in the low-income Medicaid comparison group. In addition, children with eligibility categories used for children enrolled through juvenile justice at any time during the year were excluded from the low-income comparison group. The exclusion of infants under the age of one in this study improved the

validity of utilization comparisons, since newborns account for a large number of inpatient hospitalizations in the low-income comparison group.

Interpretation of Results and Limitations

This is a study of children in out-of-home placement by type of placement. Compared with some studies of children in out-of-home placement, the number of children used lends credibility to the findings. However, a number of cautions about the data used and results of this study are provided. The number of children in residential placement was small compared with the family foster care or low-income comparison groups. This may impact the precision of rate estimates generated in this report for the residential placement group. This study was based on administrative eligibility and claims data. The residential placement group may have some services bundled in residential service claim billings, which may impact the reliability of some measures.

While it might be of interest to incorporate information about the parents of children in out-of-home placement in the analysis, this type of information was not available for this study.

RESULTS

Enrollment and Duration in Out-of-Home Placement

The intent of this section of the report is to provide information about the enrollment demographics of the study populations and the duration of time in out-of-home placement.

Enrollment figures for SFY2007 are provided in Table 1. For SFY2007, 262 children in residential placement, 1,082 in family foster care, and 71,319 in the low-income Medicaid comparison group were studied.

Table 1. Child Enrollment by Study Group, SFY2007

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Unique Members Covered (Age 1-18)	262	1,082	71,319
Member Months	2,915	12,090	716,360
Average Members per Month	243	1,008	59,697

Member Month: total full or partial months members were enrolled, whether or not the member actually received services during the period. A member enrolled for an entire year would account for 12 member months.
Average Members per Month: member months divided by 12. Represents an average number of members enrolled for the year across each month in the year.

Children enrolled in out-of-home placement averaged 11 months of Medicaid enrollment during the year. Children in the low-income comparison group averaged 10 months of Medicaid enrollment during the year. Because of differences in length of enrollment, average members (member months / 12) was used to develop rates in this and other NH CHIS reports. There were 243 averaged residential placement members, 1,008 averaged family foster care members, and 59,697 averaged low-income Medicaid comparison group members.

Table 2. Percent of Membership (averaged members) by Age Group, SFY2007

Age Group	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total All Ages (1-18)	100% (243)	100% (1,008)	100% (59,697)
1-2 (12-35 mos)	1% (3)	16% (161)	14% (8,096)
3-6 (36 mos-6 yrs)	4% (9)	25% (250)	24% (14,598)
7-11	17% (42)	22% (224)	28% (16,593)
12-18	78% (190)	37% (373)	34% (20,410)
Gender			
Female	41% (100)	50% (500)	49% (29,192)
Male	59% (143)	50% (508)	51% (30,504)

*Infants under the age of one were not included in this study. Counts are average members per month: member months divided by 12. Represents an average number of members enrolled for the year across each month in the year.

Enrollment distribution by age and gender is reported in Table 2. Children in residential placement were more likely to be adolescents (78%), compared with family

foster care (37%) or the low-income comparison group (34%). Children in residential placement were more likely to be male (59%) compared with family foster care (50%) or the low-income comparison group (51%).

Figure 1 and Table 3 summarize duration of time in out-of-home placement and the number of placements. The 1,344 children studied had 4,792 placements and spent a combined 48,761 months in out-of-home placement. Among the 262 children in the residential placement group, 158 (60%) had four or more placements compared with 324 (30%) of the 1,082 children in family foster care. Adjusting for age, gender, and total duration in out-of-home placement, children in residential placement were 2.4 times more likely to have four or more placements compared with children in family foster care.

Changes in placement sometimes reflect efforts to achieve case-plan goals and may in fact be in the best interest of the child. Examples include moves from a more restrictive to less restrictive setting, moves from a non-relative to a relative home, a move to an adoptive home, moves to be placed with siblings, and moves that bring a child closer to family and community.

Figure 1. Distribution of Children in Out-of-Home Placement by Total Number of Placements

Note: This figure provides the complete out-of-home placement history since first placement

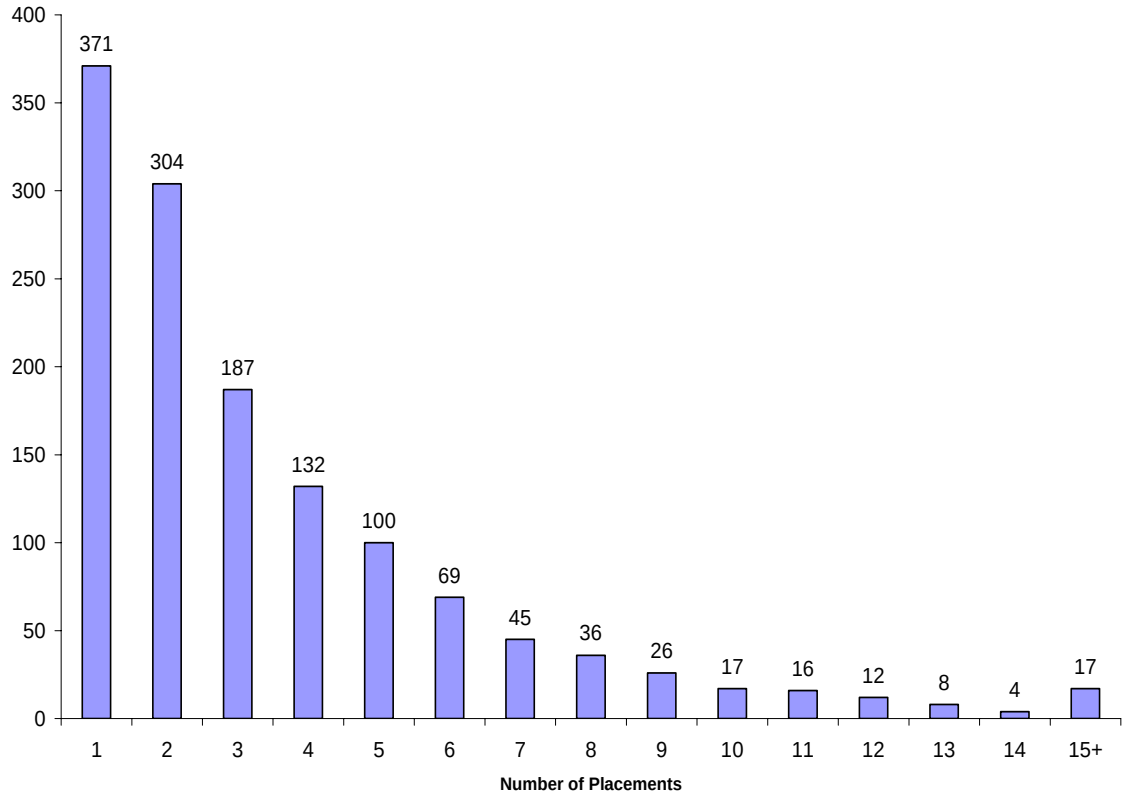


Table 3. Number of Placements and Duration of Time in Foster Care, SFY2007

Note: This table provides the complete out-of-home placement history since first placement

	All Children in Out-of-Home Placement	Residential Placement	Family Foster Care
Study children	1,344	262	1,082
Number of spells*	1,697	369	1,328
Number of placements	4,792	1,347	3,445
Months in out-of-home placement	48,761	11,851	36,910
Months in residential placement	11,356	8,388	2,967
Months in family foster care	36,880	3,250	33,630
Average number of placements	3.6	5.1	3.2
Median number of placements	2	4	2
Percent with four or more placements**	36%	60%	30%
Average months in out-of-home placement	36.3	45.2	34.1
Median months in out-of-home placement	23	30	21

*A spell is a continuous period spent in out-of-home placement. Children may have multiple spells in out-of-home placement and multiple placements.

**Result of logistic regression analysis controlling for age, gender, and length of time in out-of-home placement indicated that children in residential placement were 2.4 times more likely to have 4 or more placements compared with children in family foster care.

The distribution of children in out-of-home placement by Health Analysis Area (HAA) of the child's residence was evaluated. The geographic distribution of children in out-of-home placement was similar to the geographic distribution of low-income comparison group.

Access to Primary Care Practitioners and Preventive Visits

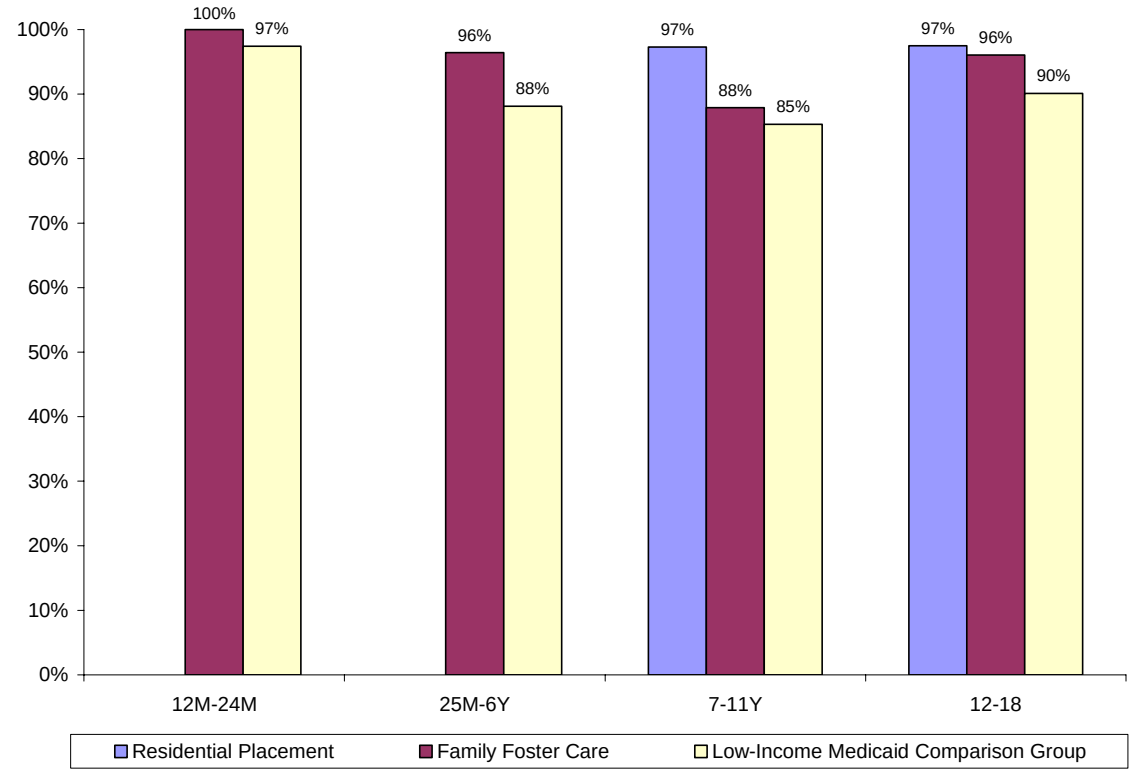
In this section, NCQA HEDIS access to primary care practitioners and well-child preventive visit measures are reported.

Access to Primary Care Practitioners

Children and adolescents' access to primary care practitioners is a NCQA HEDIS measure. NCQA HEDIS measures the percentage of children age 12 through 24 months old and 25 months through 6 years old, with at least one primary care practitioner visit during the current year (one year measure), and the percentage of children 7 through 11 years old and 12 through 19 years old with at least one visit during the current or prior year (two year measure). For this report, HEDIS age group 12-19 years was modified to 12-18 years for consistency with the definition of children used in all other NH CHIS reporting and this study. All measures were based on children continuously enrolled during the year (zero or one month gap in coverage during study period). The HEDIS access to primary care practitioner measure is not a measure of preventive service; the visits reported include both visits for preventive services and visits for medical illness and other problems.

Figure 2. Percent of Children with Access to Primary Care Practitioner During the Year by Age and Study Group, SFY2007

Note: insufficient number of children in residential placement for ages 12-24 months and 25 months-6 years to report statistically reliable rates



Results for children and adolescents' access to primary care practitioner measures are reported in Figure 2 and Table 4. Children in out-of-home placement were more likely to have had at least one visit with a primary care practitioner compared with the low-income comparison group and with both the national NCQA HEDIS Medicaid and commercial managed-care rates.

Table 4. Percent of Children with Access to Primary Care Practitioner by Plan Type, SFY2007

Note: 95% confidence intervals (CI) in parentheses

New Hampshire Measurement Based on Administrative Claims Data			
Age Group	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**
12-24 months	*	100.0% (99.3-100.0)	97.4% (96.9-98.0)
25 months-6 years	*	96.4% (94.2-98.7)	88.1% (87.6-88.7)
7-11 years	97.3% (90.7-100.0)	87.9% (83.0-92.8)	85.3% (84.6-86.0)
12-18 years	97.5% (94.7-100.0)	96.1% (93.7-98.4)	90.1% (89.6-90.6)
National 2007 NCQA Managed Care Plan HEDIS Reporting Year			
Age Group	**Medicaid**	**Commercial**	
12-24 months	94.1%	97.0%	
25 months-6 years	84.9%	89.3%	
7-11 years	85.9%	86.6%	
12-19 years	83.2%	89.2%	

*Insufficient number of children in residential placement for age 12-24 months and 25 months-6 years to report a statistically reliable rate; all children in these two age groups did have a visit with a primary care practitioner.
Note: Consistent with NCQA HEDIS reporting for ages 7-11 and 12-18 the measure is a 2-year measure (primary care visit within the current or prior year).

The primary care practitioner access rate for adolescent children 12-18 years of age in residential placement (97.5%) and family foster care (96.1%) was higher than the NH Medicaid low-income comparison group (90.1%), the national Medicaid managed care rate (83.2%), and the national commercial managed care rate (89.2%).

These results indicate that almost all children in out-of-home placement had at least one visit with a primary care practitioner. The NCQA HEDIS access to primary care practitioners is not a measure of preventive service; the visits reported include both visits for preventive services and visits for medical illness and other problems. Measurement of well-child preventive visits is reported in the next section.

Well-Child and Well-Care Preventive Visits

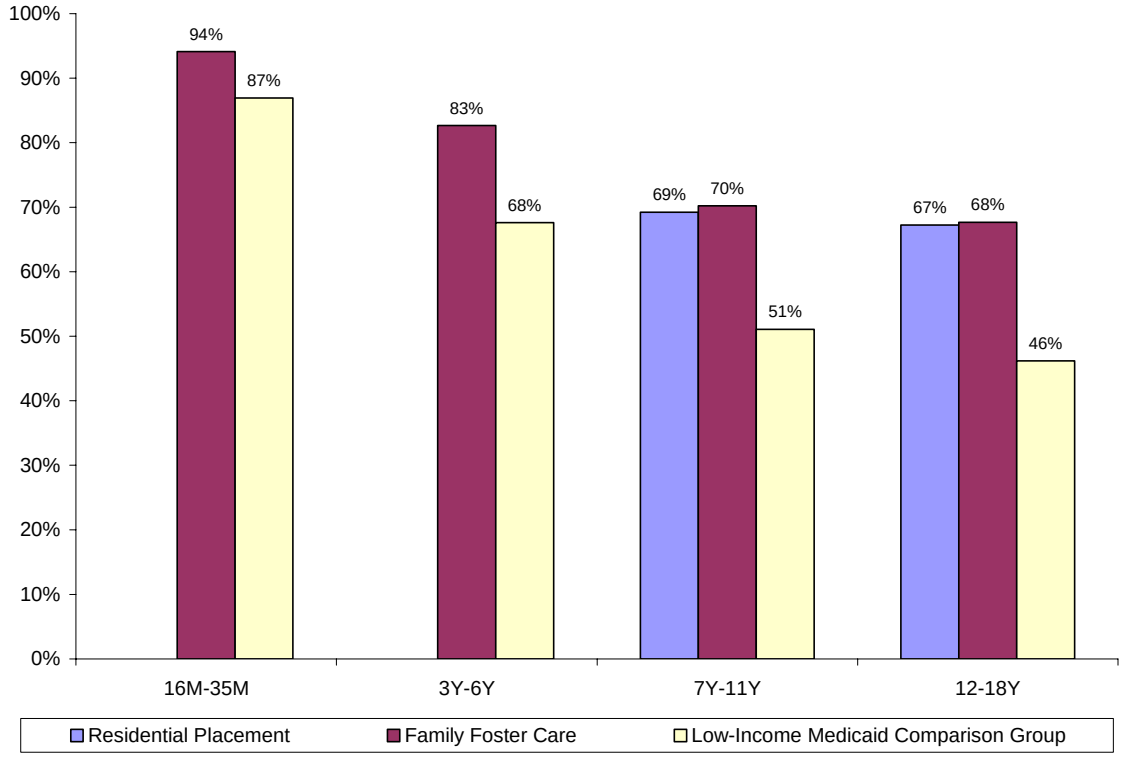
The number of completed well-child/care visits is a NCQA HEDIS use of service measure. These HEDIS measures are based on specific codes used to identify the visit as preventive in nature and, therefore, are distinguished from the access to primary care practitioner measure reported in the previous section. NCQA HEDIS reports a one-year measure for children age 3-6 years and a one-year measure for adolescent children age 12-21 years. For this report, a well-child measure for children age 16-35 months and children age 7-11 years was added, and the age 12-19 years measure was modified to 12-18 years for consistency with the definition of

children used in this study. All measures are based on continuous enrollment for the study period (zero or one month gap in coverage during study period).

Figure 3 and Table 5 provide well-child visit rates by age and study group. For each study group, well-child visit rates declined with age. The well-child and adolescent well-care visit rates were higher in children in out-of-home placement compared with the low-income Medicaid comparison group. The children in out-of-home placement also had higher well-child preventive visit rates than the NCQA HEDIS national managed care Medicaid and commercial plan averages.

Figure 3. Percent of Children with a Well-Child/Care Visit During the Year by Age and Study Group, SFY2007

Note: insufficient number of children in residential placement for ages 16-35 months and 3-6 years to report statistically reliable rates



For ages 3-6 years, the rate of well-child visits for children in family foster care (82.7%) was significantly higher than the low-income Medicaid comparison group (67.6%), the national Medicaid managed care rate (66.8%), or the national commercial managed care rate (66.7%).

For adolescents, the rate of well-care preventive visits for children in residential placement (67.2%) and family foster care (70.2%) was significantly higher than the NH low-income Medicaid comparison group (51.1%), the national Medicaid managed care rate (43.6%), or the national commercial managed care rate (40.3%).

These results are both positive and negative. They indicate that children in out-of-home placement in New Hampshire were more likely to have a preventive visit than other children in Medicaid or children in managed care Medicaid or commercial plans nationally. However, the results also indicate that some children in out-of-home placement did not receive a well-child preventive visit and the likelihood of not having a well-child preventive visit increased with age of the child in out-of-home placement. One-third of adolescents in out-of-home placement did not receive a preventive well-child visit during the year.

Table 5. Percent of Children With a Well-Child/Care Visit to a Primary Care Practitioner by Age and Study Group, SFY2007

Note: 95% confidence intervals (CI) in parentheses

Measurement Based on NH CHIS Administrative Claims Data			
Age Group	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**
16-35 months	*	94.1% (89.8-98.4)	87.0% (86.0-87.9)
3-6 years	*	82.7% (77.6-87.8)	67.6% (66.8-68.5)
7-11 years	69.2% (53.5-85.0)	70.2% (63.7-76.6)	51.1% (50.2-51.9)
12-18 years	67.2% (60.0-74.5)	67.7% (62.5-72.9)	46.2% (45.4-47.0)
National 2007 NCQA Managed Care Plan HEDIS Reporting Year			
Age Group	**Medicaid**	**Commercial**	
3-6 years	66.8%	66.7%	
12-21 years	43.6%	40.3%	

*Insufficient numbers of children in residential placement for ages 16-35 months and 3-6 years to report a statistically reliable rate.

Prevalence of Disease and Health Conditions

Clinical Classification Software (CCS) Groupings

Using the diagnosis coding on the administrative claims, disease prevalence rates for study children were evaluated. Diagnoses were aggregated into clinically meaningful groupings using the Clinical Classification Software (CCS) for ICD-9-CM from the Agency for Healthcare Research and Quality (AHRQ).[13]

Prevalence rates of diseases and disorders are reported by major CCS category and for selected CCS categories in Table 6 and for all CCS categories in Appendix 4 at the end of this report. Compared to the low-income Medicaid comparison group, children in out-of-home placement had higher prevalence of:

- nutritional or metabolic disorders;
- mental health disorders and mental retardation;
- epilepsy, convulsions;
- blindness and vision problems; and
- congenital anomalies.

In addition, children in residential placement had higher prevalence of:

- digestive and genito-urinary conditions;
- skin problems;
- musculoskeletal disorders;
- abdominal pain; and
- injuries.

Children in out-of-home placement were more likely to have an administrative claim indicating an immunization or screening for infectious or other suspected medical conditions. This may indicate that children in out-of-home placement may have received preventive care at a higher rate than other low-income children in Medicaid. It could also indicate that children in out-of-home placement had significant unmet preventive health care needs prior to placement that were being addressed after out-of-home placement.

Table 6. Prevalence of Diseases and Disorders by Clinical Classification Software (CCS) Major and Selected Diagnosis Groupings, SFY2007

Note: Counts of children with condition in parentheses. Appendix 4 at the end of this report contains prevalence rates for all CCS categories.

CCS #	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Infectious and parasitic diseases (total)		27.6% (67)	21.5% (217)	16.5% (9,830)
7	Viral infections	9.1% (22)	10.6% (107)	9.5% (5,642)
10	Immunizations and screening for infectious diseases	18.1% (44)	10.1% (102)	5.9% (3,505)
Neoplasms (total)		2.1% (5)	0.5% (5)	0.9% (556)
Endocrine, nutritional, and metabolic diseases and immunity disorders (total)		12.8% (31)	9.5% (96)	4.0% (2,367)
49	Diabetes mellitus without complication	0.4% (1)	0.3% (3)	0.3% (190)
58	Other nutritional, endocrine, and metabolic disorders	6.2% (15)	7.5% (76)	2.8% (1,700)
Mental illness (total)		85.2% (207)	74.6% (752)	20.8% (12,419)
65	Mental retardation	3.3% (8)	1.7% (17)	0.3% (205)
69	Affective disorders	26.8% (65)	10.2% (103)	2.6% (1,550)
72	Anxiety, somatoform, dissociative, and personality disorders	35.0% (85)	18.8% (189)	3.1% (1,871)
73	Pre-adult disorders	33.8% (82)	19.3% (194)	8.2% (4,912)
Diseases of the nervous system and sense organs (total)		58.0% (141)	52.3% (527)	38.2% (22,778)
83	Epilepsy, convulsions	4.1% (10)	2.1% (21)	1.0% (617)
84	Headache, including migraine	5.4% (13)	1.7% (17)	2.4% (1,444)
89	Blindness and vision defects	14.0% (34)	8.3% (84)	5.0% (2,987)
91	Other eye disorders	32.1% (78)	19.1% (192)	10.4% (6,221)
Diseases of the circulatory system (total)		5.8% (14)	3.8% (38)	2.5% (1,465)
Diseases of the respiratory system (total)		42.0% (102)	42.7% (430)	41.3% (24,683)
122	Pneumonia (except that caused by tuberculosis and STD)	3.7% (9)	1.6% (16)	2.0% (1,204)
126	Other upper respiratory infections	29.2% (71)	30.3% (305)	29.9% (17,842)
128	Asthma	6.2% (15)	8.1% (82)	5.4% (3,194)
134	Other upper respiratory diseases	7.8% (19)	6.7% (67)	4.8% (2,881)
Diseases of the digestive system (total)		16.1% (39)	11.7% (118)	10.1% (6,014)
Diseases of the genitourinary system (total)		19.8% (48)	8.9% (90)	7.3% (4,335)
Diseases of the skin and subcutaneous tissue (total)		16.5% (40)	10.4% (105)	9.1% (5,444)
Diseases of the musculoskeletal system and connective tissue (total)		18.1% (44)	9.0% (91)	7.6% (4,533)
Congenital anomalies (total)		5.8% (14)	4.9% (49)	2.7% (1,585)
Symptoms, signs, and ill-defined conditions and factors influencing health status (total)		100.0% (247)	86.9% (876)	66.1% (39,487)
251	Abdominal pain	10.7% (26)	3.3% (33)	4.4% (2,612)
255	Administrative/social admission	93.4% (227)	77.5% (781)	54.9% (32,792)
258	Other screening for suspected conditions (not mental health disorders or infectious disease)	9.5% (23)	7.9% (80)	4.6% (2,732)
Injury and poisoning (total)		40.3% (98)	29.4% (296)	23.2% (13,821)
232	Sprains and strains	11.9% (29)	3.9% (39)	4.0% (2,361)
236	Open wounds of extremities	5.8% (14)	2.8% (28)	2.0% (1,186)
239	Superficial injury, contusion	11.9% (29)	7.2% (73)	6.4% (3,842)

Acute upper respiratory conditions are common in children. There were no significant differences in the rate of acute upper respiratory conditions (CCS 126) among children in residential placement (29%), family foster care (30%), and the other low-income comparison group (30%). The prevalence rate of asthma (CCS 128) in children in out-of-home placement was slightly higher than in the low-income comparison group.

The prevalence rate of blindness and other vision defects (CCS 89) was twice as high in children in out-of-home placement compared with the low-income Medicaid group and was statistically significant after adjusting for age differences in the populations.

Mental health disorder prevalence was higher in children in out-of-home placement than the low-income comparison group. Affective disorders (CCS 89) were five-times more common in children in out-of-home placement compared with the low-income Medicaid group and this was statistically significant adjusting for age differences in the populations. Mental health disorders and associated utilization will be evaluated in more detail in a later section in this report using diagnostic groupings developed specifically to evaluate mental health disorders.

Clinical Risk Grouper (CRG)

In order to compare the overall burden of disease for the three study groups, the 3M Health Systems Clinical Risk Grouper (CRG) was applied to the administrative claims data.[14] The CRG software uses all ICD-9-CM diagnosis codes from all health care encounters to assign each individual to diagnostic categories (acute or chronic) and body systems. Each individual is grouped to a defined health status group then to a CRG category and severity level if chronically ill. Based on the CRGs each individual member was assigned a risk weight to measure the relative burden of disease.

Table 7 summarizes the children in the three study groups by CRG category. The overall disease burden as measured using the 3M™ Clinical Risk Group (CRG) software was higher in the residential placement group (risk weight 2.26) compared with family foster care (1.17) or the low-income comparison group (0.50). The proportion of children classified by CRG Core Status Group as healthy was much lower in the residential placement group (11%) and the family foster care group (49%) than the low-income comparison group (78%). Examination of the detailed CRGs indicated that mental health disorder CRGs were a major driver of higher risk scores associated with children in out-of-home placement.

Figure 4 provides the average CRG score for the study groups by age. Regardless of age, children in residential placement had 4 times the relative disease burden and children in family foster care had 2 times the relative disease burden compared with children in the low-income comparison group.

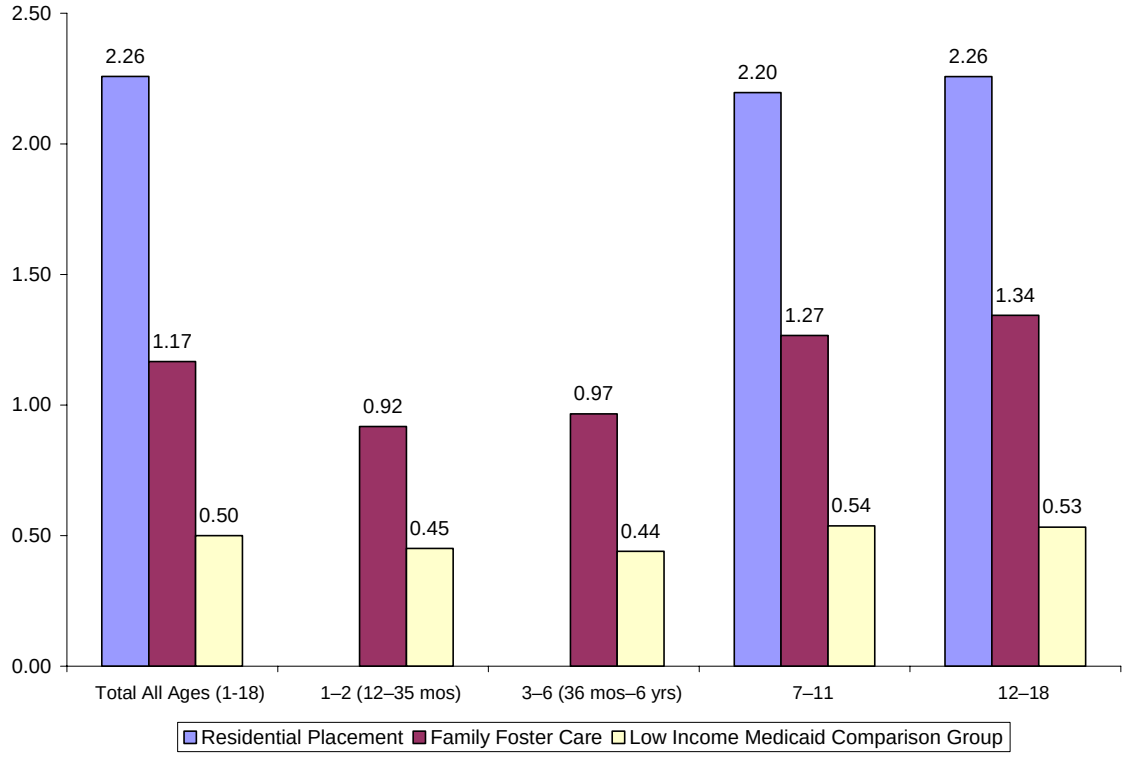
Table 7. Clinical Risk Group (CRG) Classification by Study Group, SFY2007

CRG Core Health Status Groups	Residential Placement	Family Foster Care	Low-income Medicaid Comparison Group
1 Healthy	11% (29)	49% (531)	78% (55,808)
2 History of significant acute disease	19% (49)	10% (104)	7% (4,761)
3 Single minor chronic disease	10% (27)	9% (95)	6% (4,402)
4 Minor chronic disease in multiple organ systems	2% (4)	1% (6)	0% (220)
5 Single dominant or moderate chronic disease	45% (117)	28% (302)	8% (5,387)
6 Disease in chronic multiple organ systems	12% (32)	4% (38)	1% (535)
7 Dominant chronic disease in 3 or more organ systems	0% (0)	0% (0)	0% (0)
8 Dominant and metastatic malignancies	0% (0)	0% (0)	0% (30)
9 Catastrophic Conditions	0% (0)	0% (4)	0% (73)
Average CRG Risk Weight	2.26	1.17	0.50

*CRG category #1 Healthy includes both members with no encounters and members with encounters for preventive service and minor conditions. All members are assigned a relative risk weight. Members classified as healthy are assigned a very low risk weight.

Figure 4. Average CRG Risk Weight by Year by Age and Study Group, SFY2007

Note: insufficient number of children in residential placement for ages 1-2 and 3-6 years to report statistically reliable rates



Utilization of Services

The intent of this section of the report is to evaluate rates of service utilization by study group. Inpatient hospitalizations, outpatient emergency department use, office-clinic visit use, prescription drug use, and dental services are reported.

Inpatient hospitalization

Table 8 provides inpatient hospitalization rates for children in out-of-home placement compared to other low-income children enrolled in Medicaid. The rate of inpatient hospitalization was higher in children in residential placement (259 per 1,000 members) and family foster care (66 per 1,000 members) than the low-income comparison group (27 per 1,000 members). This pattern was consistent over all age groups and by gender. Mental health disorders accounted for 64 (50%) of the 129 inpatient hospitalizations for children in out-of-home placement.

Table 8. Inpatient Hospitalization Rates per 1,000 Members by Age, Gender, and Study Group, SFY2007

Note: Count of hospitalizations in parentheses

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total	259 (63)	66 (66)	27 (1,585)
Age Group			
1-2 (12-35 mos)	* (5)	118 (19)	36 (293)
3-6 (36 mos-6 yrs)	* (0)	32 (8)	17 (242)
7-11	192 (8)	40 (9)	16 (261)
12-18	264 (50)	80 (30)	39 (789)
Gender			
Female	271 (27)	84 (42)	30 (879)
Male	251 (36)	47 (24)	23 (706)

*There were an insufficient number of children in residential placement for ages 1-2 and 3-6 to report statistically reliable rates. Children in residential placement incurred $519,813 in inpatient payments and family foster care children incurred $306,304 in inpatient payments.

Mental health disorders were the leading cause of inpatient hospitalization in all three study groups and accounted for 50 percent of the inpatient hospitalizations for children in out-of-home placement.

Outpatient Emergency Department Visits

Table 9 provides outpatient emergency department visit rates for children in out-of-home placement compared to other low-income children enrolled in Medicaid. The rate of outpatient emergency department visits was higher in children in residential placement (1,358 per 1,000 members) and family foster care (657 per 1,000 members) than the low-income comparison group (560 per 1,000 members).

This pattern varied somewhat by age and gender. Children age 1-2 and 3-6 years old in family foster care had slightly lower rates of outpatient ED use compared with

the low-income comparison group. The highest rates of outpatient ED use were among adolescents in the residential group (1,577 per 1,000 members). For both out-of-home placement groups, outpatient ED visit rates were higher for female children compared with male children and this was consistent across age groups.

Injuries (338), respiratory illnesses (148), and mental health disorders (117) accounted for 61 percent of the total (992) outpatient emergency department visits incurred by children in out-of-home placement.

Table 9. Outpatient Emergency Department Visit Rates per 1,000 Members by Age, Gender, and Study Group, SFY2007

Note: Count of outpatient emergency department visits in parentheses

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total	1,358 (330)	657 (662)	560 (33,436)
Age Group			
1-2 (12-35 mos)	* (3)	958 (154)	983 (7,961)
3-6 (36 mos-6 yrs)	* (2)	444 (111)	510 (7,449)
7-11	625 (26)	460 (103)	397 (6,593)
12-18	1,577 (299)	788 (294)	560 (11,433)
Gender			
Female	1,784 (178)	812 (406)	563 (16,432)
Male	1,062 (152)	505 (256)	557 (17,004)

*There were an insufficient number of children in residential placement for ages 1-2 and 3-6 to report statistically reliable rates. Children in residential placement incurred $109,015 in outpatient ED payments and family foster care incurred $153,291 in outpatient ED payments.

Office-Clinic Visits

Office-clinic visit rates are reported in Table 10. Office-clinic visit rates were higher for younger children age 1-2 and 3-6 than older children age 7-11 or adolescents age 12-18. The office-clinic visit rate for children in residential placement (5,092 per 1,000 members) was higher than the visit rate for family foster care (4,924 per 1,000) or the low-income comparison group (3,361 per 1,000). This pattern was consistent across age groups.

Table 10. Office or Clinic Visit Rates per 1,000 Members by Age, Gender, and Study Group, SFY2007

Note: Count of office-clinic visits in parentheses

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total	5,092 (1,237)	4,924 (4,961)	3,361 (200,665)
Age Group			
1-2 (12-35 mos)	* (28)	9,575 (1,540)	6,252 (50,618)
3-6 (36 mos-6 yrs)	* (56)	4,387 (1,096)	3,174 (46,330)
7-11	4,184 (174)	3,477 (778)	2,686 (44,574)
12-18	5,164 (979)	4,147 (1,547)	2,898 (59,143)
Gender			
Female	5,855 (584)	5,032 (2,517)	3,435 (100,276)
Male	4,561 (653)	4,817 (2,444)	3,291 (100,389)

*There were an insufficient number of children in residential placement for ages 1-2 and 3-6 to report statistically reliable rates. Children in residential placement incurred $98,584 in office-clinic visit payments and family foster care incurred $418,020 in office-clinic visit payments.

Use of Prescription Drugs

Rates of utilization for prescription drugs are reported in Table 11 and Figures 5 and 6. Children in residential placement (98%) and family foster care (86%) were more likely to have used at least one prescription medication than children in the low-income comparison group (73%). The rate of prescription drug use for children in residential placement (777 days supply per member per year) was three times the rate for family foster care (270 days supply per member per year) and seven times the rate for the low-income comparison group (113 days supply per member per year).

Table 11. Prescription Drug Utilization by Study Group, SFY2007

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Members with any medication use	239	864	43,610
Number of Scripts	9,067	10,988	300,054
Total Days Supply Prescribed	188,646	272,108	6,760,783
Prevalence Rate of Members Using Any Medication	98%	86%	73%
Days Supply Per Member Per Year	777	270	113
Days Supply Per Member Using Medication	789	315	155

By age and gender, use rates were consistently highest for children in residential placement, lower for children in family foster care, and lowest for children in the low-income comparison group.

Appendix 5 at the end of this report summarizes medication use rates by therapeutic category. For each of the major drug therapeutic categories (antiasthmatics, antihistamines, antibiotics, cardiovascular, anticonvulsants, antidepressants, tranquilizers, stimulants, anxiolytics, gastrointestinals, oral contraceptives, and skin agents), the rate of days supplied per member per year was highest in children in residential placement, lower in family foster care, and lowest in the low-income comparison group.

Psychotropic medications were a major component of prescription drug use for children in out-of-home placement and use rates were higher for children in residential placement. Psychotropic medications accounted for 58 percent of total drug use for children in residential placement, 46 percent of total drug use for children in family foster care, and 33 percent of total drug use for children in the low-income comparison group. Psychotropic drug use will be evaluated further in a later section of this report evaluating mental health disorders.

Figure 5. Prescription Drug Rate of Days Supply Per Member Per Year by Age, Gender, and Study Group, SFY2007

Note: insufficient number of children in residential placement for ages 12-35 months and 3-6 years to report statistically reliable rates. Denominator is average members covered.

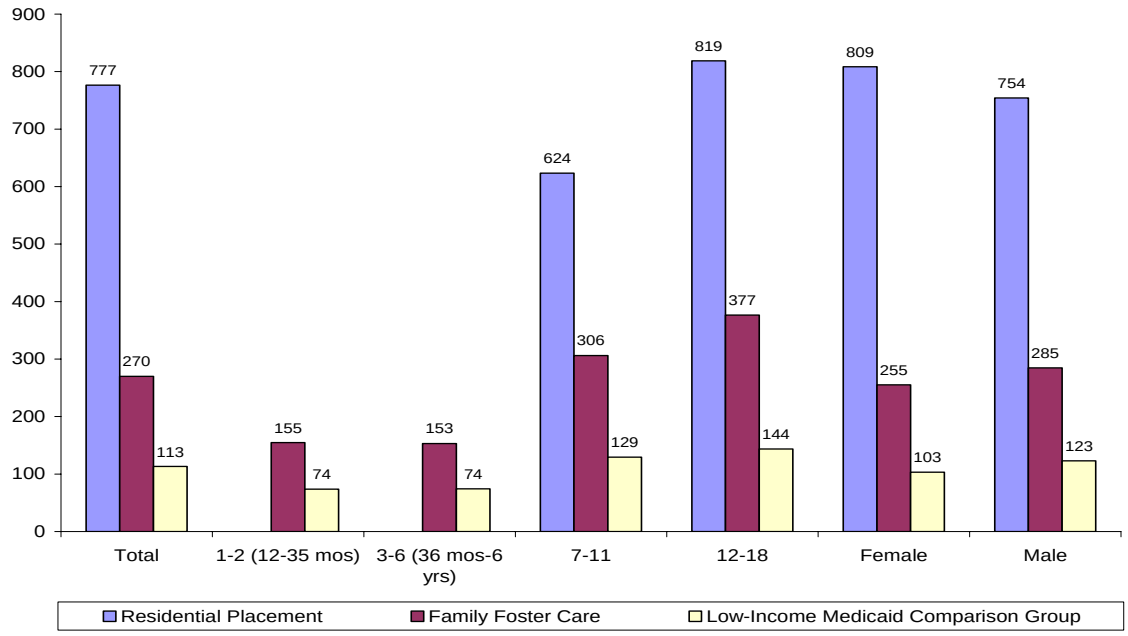
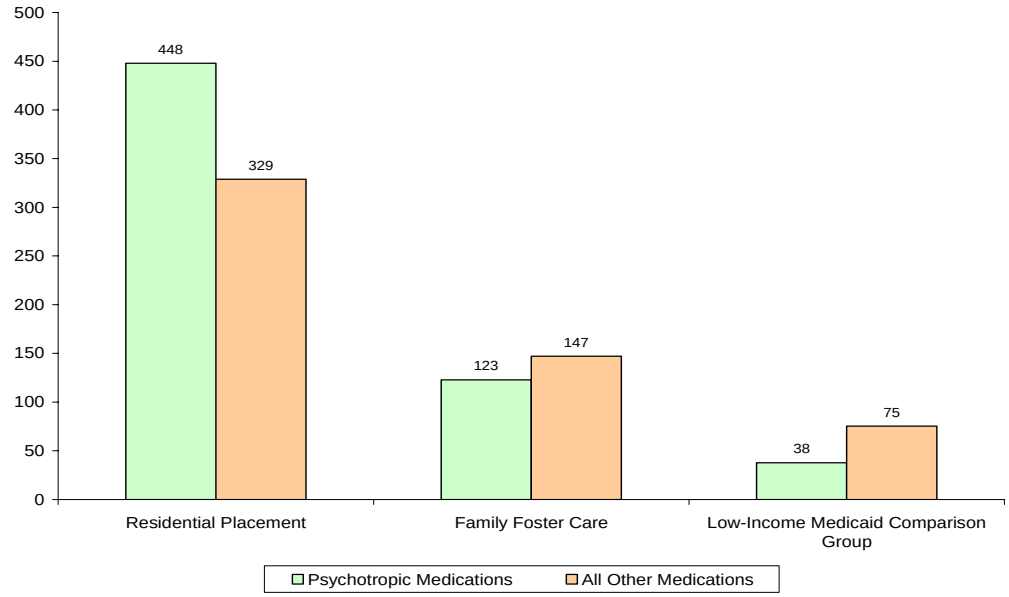


Figure 6. Psychotropic Prescription Medication Rate of Days Supply Per Member Per Year, SFY2007

Note: Denominator is average members covered.



Use of Dental Services

Dental services were identified using Healthcare Common Procedure Coding (HCPCS) billing codes and reported in Table 12. In total, 206 of the children in residential placement had 685 services, 724 of the children in family foster care had 1,994 services, and 33,977 of the children in the low-income comparison group had 85,208 services. The prevalence of any dental service was higher among children in residential placement (85%) and family foster care (72%) compared with the low-income group (57%). Children in out-of-home placement were more likely to have diagnostic and preventive care. Children in residential placement were more likely to have received restorative care services or oral surgery compared with children in home placement or the low-income comparison group.

The rate of use of dental services in children in residential placement (2,820 services per 1,000 members) was higher than children in family foster care (1,979 per 1,000) and the low-income comparison group (1,427 per 1,000). The higher use rates for children in out-of-home placement were consistent by age group and gender.

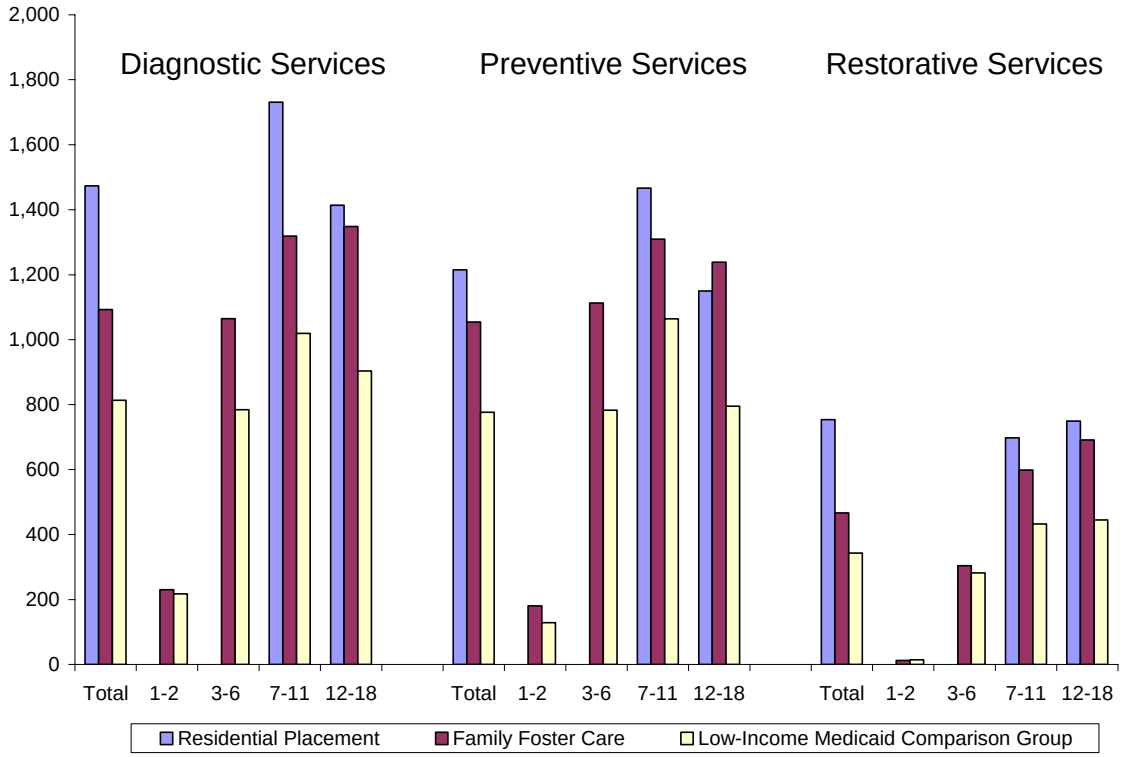
Table 12. Prevalence of Children Using Dental Services by Study Group, SFY2007

Note: Count of the number of children with any dental service in parentheses

Dental Service Type	Procedure Codes	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total		85% (206)	72% (724)	57% (33,977)
Diagnostic	D0100-D0999	82% (199)	67% (678)	52% (31,085)
Preventive	D1000-D1999	79% (191)	66% (668)	51% (30,457)
Restorative (fillings, etc.)	D2000-D2999	42% (101)	27% (268)	21% (12,331)
Endodontics (root canal treatment)	D3000-D3999	5% (13)	4% (38)	3% (1,828)
Periodontics (soft and hard tissues around the teeth)	D4000-D4999	0% (0)	0% (0)	0% (34)
Prosthodontics (removable false teeth or bridges)	D5000-D5899	0% 0)	0% (1)	0% (13)
Maxillofacial Prosthetics (devices that replace facial and jaw structures)	D5900-D5999	0% (0)	0% (0)	0% (2)
Implant Services	D6000-D6199	0% (0)	0% (0)	0% (0)
Prosthodontics, fixed (crowns and bridges that are cemented and not removable)	D6200-D6999	0% (0)	0% (0)	0% (1)
Oral and Maxillofacial Surgery	D7000-D7999	11% (26)	7% (68)	7% (4,130)
Orthodontics	D8000-D8999	7% (16)	4% (40)	3% (1,534)
Adjunctive General Services	D9000-D9999	14% (33)	9% (92)	7% (4,414)

Figure 7 summarizes service utilization rates for the three leading categories of dental service (diagnostic, preventive, and restorative). Children in residential placement and foster family care had higher rates of diagnostic, preventive, and restorative dental care. These findings were consistent across all age groups. The results indicate lower rates of preventive dental care in adolescents age 12-18 compared with children age 7-11 for all study groups.

Figure 7. Utilization of Dental Services by Major Type of Service, Age, and Study Group. Service rates per 1,000 members, SFY2007



Mental Health Disorders

Prevalence of Mental Health Disorders

Mental health disorders are common for children enrolled in Medicaid. A summary of prevalence rates of any mental health disorder is provided in Table 13 by age, gender, and study group.

The prevalence of any mental health disorder among adolescents in residential placement (90%) and family foster care (82%) was significantly higher than adolescents in the low-income comparison group (28%).

Prevalence rates of mental health disorders increased with age group of the child. For each age group and by gender the prevalence of mental health disorders was highest in the residential placement, slightly lower in family foster care, and lowest in the low-income Medicaid comparison group.

Table 13. Prevalence of Children with Any Mental Health Disorder by Age, Gender, and Study Group, SFY2007

Note: Count of children with any mental health disorder in parentheses

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total	90% (219)	68% (686)	20% (12,121)
Age Group			
1-2 (12-35 mos)	* (0)	14% (23)	2% (177)
3-6 (36 mos-6 yrs)	* (9)	64% (160)	12% (1,805)
7-11	94% (39)	88% (196)	27% (4,507)
12-18	90% (171)	82% (307)	28% (5,632)
Gender			
Female	93% (93)	70% (350)	18% (5,176)
Male	88% (126)	66% (336)	23% (6,945)

*There were an insufficient number of children in residential placement for ages 1-2 and 3-6 to report statistically reliable rates.

Mental health disorder prevalence rates by clinical diagnostic category are summarized in Table 14. All results are based on the ICD-9-CM coding in the claims during SFY2007.

Children in residential placement (35%) were more likely to have a serious mental health disorder than children in family foster care (11%) or the low-income comparison group (3%). The most common diagnoses for children in residential placement was stress and adjustment disorders and 83 (34%) of the children had claims indicating post-traumatic stress disorder.

While the rate of major depression was similar between the residential placement group (6%) and the family foster care group (5%), the prevalence of bipolar and other

affective disorders was four times higher in the residential placement group (26%) compared with the family foster care group (6%).

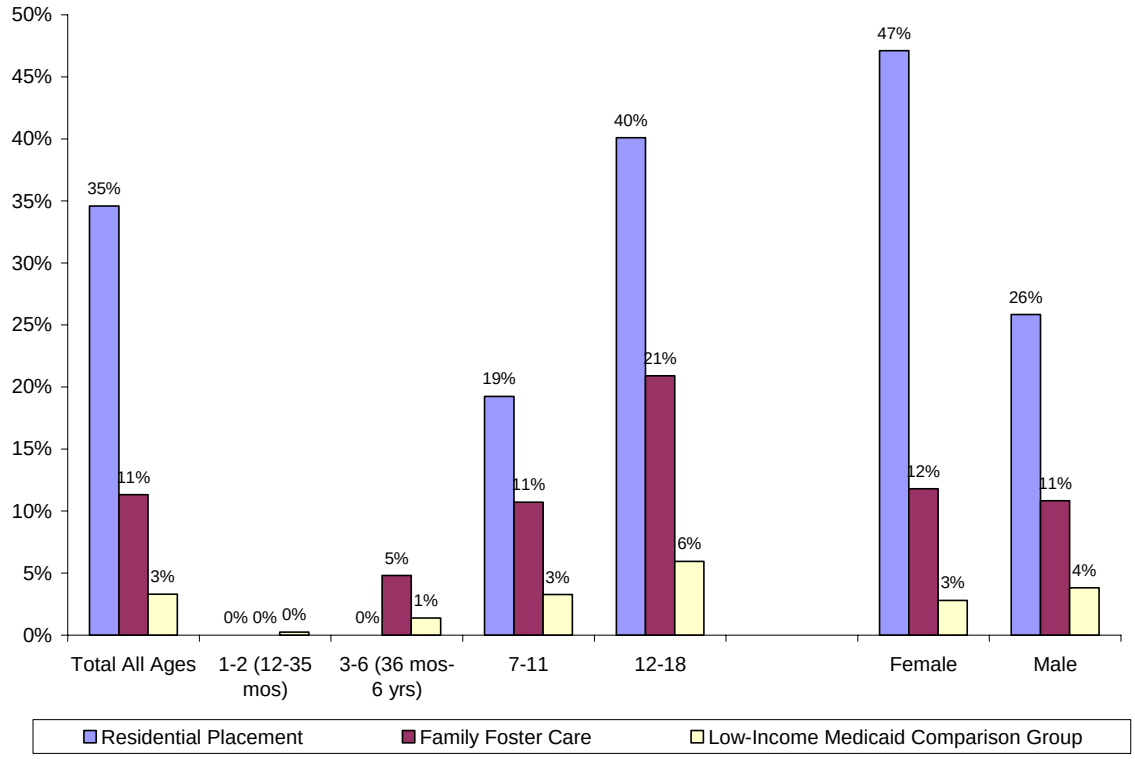
Table 14. Prevalence of Children with Mental Health Disorder by Study Group, SFY2007

Note: Counts of children with mental health disorder in parentheses. Categories are not mutually exclusive. The same child may be reported in more than one diagnostic group if the child had claims with different mental health disorder diagnoses during the year. Numbers will not add to total.

Mental Health Disorder Category	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Any Mental health disorders	90% (219)	68% (686)	20% (12,121)
Total Serious Mental Illness	35% (84)	11% (114)	3% (1,979)
Total Other Mental Illness	86% (208)	66% (666)	19% (11,419)
Serious Mental Illness			
Schizophrenic Disorders	2% (4)	0% (0)	0% (29)
Major Depression	6% 15)	5% (46)	1% (575)
Bipolar & Other Affective Psychoses	26% (63)	6% (60)	2% (999)
Other Psychoses	9% (22)	2% (24)	1% (595)
Other Mental Illness			
Stress & Adjustment	47% (114)	46% (460)	7% (3,952)
Personality Disorder	5% (13)	1% (8)	0% (72)
Disturbance Of Conduct	24% (58)	8% (85)	2% (1,371)
Disturbance Of Emotions	31% (75)	17% (173)	2% (1,458)
ADHD Hyperkinetic	35% (85)	18% (183)	8% (4,815)
Neurotic Disorder	26% (62)	12% (117)	4% (2,218)
Depression NEC	17% (42)	7% (71)	2% (1,311)
Other Mental health disorders	4% (10)	3% (31)	1% (870)
Special Additional Categories for This Study of Out-of-Home Placement			
Post-traumatic stress disorder	34% (83)	15% (147)	1% (620)
Substance Abuse	7% (18)	3% (28)	1% (414)
Selective mutism	0% (0)	0% (1)	0% (15)
Specific Delays in Development	5% (12)	12% (121)	3% (1,934)
Reactive Attachment Disorders	9% (21)	6% (64)	0% (72)

Figure 8 provides age and gender-specific prevalence rates of serious mental illness by study group. Regardless of age or gender, prevalence of serious mental illness is highest in the residential placement group, lower in the family foster care group, and lowest in the low-income Medicaid comparison children.

Figure 8. Prevalence Rates of Serious Mental Illness by Age, Gender, and Study Group, SFY2007



Utilization of Services for Children with Mental health disorders

For children identified with any mental health disorder, utilization rates are provided in Table 15. Inpatient use rates were significantly higher in children in residential placement (2,544 days per 1,000) compared to family foster care (510 days per 1,000) or the low-income comparison group (260 per 1,000).

The rate of psychotherapy visits was significantly higher for children with mental health disorders in residential placement (11,406 per 1,000 members) or family foster care (11,893 per 1,000) compared to the low-income Medicaid comparison group (6,181 per 1,000). In contrast, non-specialist visits (e.g., primary care practitioner) visits were higher in the low-income Medicaid comparison group (1,268 per 1,000 members) compared with the residential placement (875 per 1,000) and family foster care (971 per 1,000) groups.

Table 15. Utilization of Mental Health Services for Children with a Mental Health Disorder by Study Group, SFY2007

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Members with Mental Health Disorder	219	686	12,121
Average Members (Member Months / 12)	214	646	11,236
Utilization Volume			
Members With Mental Health Disorder Admission	39	27	319
Mental Health Disorder Inpatient Days	544	329	2,923
Mental Health Disorder Outpatient Emergency Department Visits	118	88	1,638
Mental Health Disorder Office Visits (non-specialist)*	187	627	14,246
Mental Health Disorder Specialist Visits**	3,777**	10,703	124,318
1) Psychotherapy Visits	2,439**	7,678	69,449
2) Diagnostic Evaluation, Medication Management, and Testing	644**	948	13,263
3) Mental Specialist Services Unique to Medicaid	1,122**	3,357	56,980
Utilization Rates per 1,000 Members			
Mental Health Disorder Inpatient Days per 1,000	2,544	510	260
Mental Health Disorder Outpatient Emergency Department Visits per 1,000 members	552	136	146
Mental Health Disorder Office Visits (non-specialist) per 1,000 members	875	971	1,268
Mental Health Disorder Specialist Visits per 1,000 members*	17,663**	16,579	11,064
1) Psychotherapy Visits per 1,000 members	11,406**	11,893	6,181
2) Diagnostic Evaluation, Medication Management, Testing per 1,000 members	3,012**	1,468	1,180
3) Mental Specialist Services Unique to Medicaid per 1,000 members	5,247**	5,200	5,071

*Mental Health Disorder Specialist visit for this report was based on provider specialty code and included a broad range of mental health specialists (e.g., psychiatry, psychology, licensed clinical social workers, mental health centers, licensed social workers, licensed counselors, and clinical nurse specialists with psychology identified). The measure was further subset into three sub-categories: (1) Psychotherapy (billed to all three plan types using CPT 90804-90857), (2) Diagnostic evaluation (e.g., CPT 90801), medication management (e.g., CPT 90862), and testing (e.g., CPT 96101), and other mental service CPT codes billed to all three plan types, and (3) Mental specialist services unique to Medicaid (e.g., community mental health support H0036, case management T1016, and crises intervention services H2011), and other HCPCS codes primarily billed to Medicaid only. Because counts of visits are unduplicated by member ID and date of service, these three categories will sum to greater than the total mental health disorder specialist visits. The NH Medicaid benefit limit for psychotherapy is 12 visits per year for ARNPs and other non-physician providers.

**For children in residential placement, psychotherapy and other treatments may be provided as bundled services, which may not be reflected in the coding in claims data. For children in residential placement, treatment interventions meet the individual needs of the children and families served and provide a therapeutic group-living experience. Unless otherwise specified in the child's treatment plan, any combination of individual, group, or family counseling services shall be provided to each child or the family a minimum of 3 times a week. If bundled in the claims billing, the psychotherapy and other mental health specialist service rates reported for children in residential placement may be significantly underestimated in this table.

Utilization of Psychotropic Medications for Children with Mental health disorders

Table 16 summarizes utilization of psychotropic medications for children with mental health disorders by study group. The percent of children with a mental health disorder who used a psychotropic medication was highest in residential placement (72%) and lower in family foster care (44%) and the low-income comparison group (55%). The higher rate in the low-income comparison group compared to family foster care was driven by higher use of stimulant medications.

Table 16. Utilization of Psychotropic Medications for Children with a Mental Health Disorder by Study Group, SFY2007

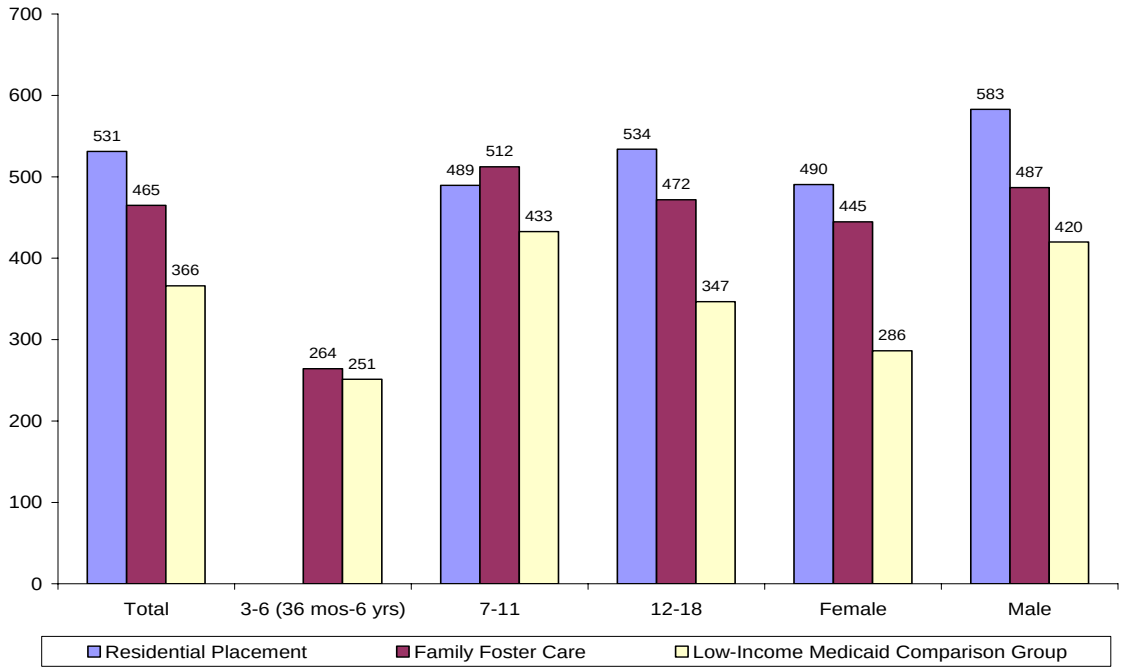
	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Members with Mental Health Disorder	219	686	12,121
Average Members (Member Months / 12)	214	646	11,236
Utilization Volume			
Members with a Mental health disorder Using Any Psychotropic Medication	154	287	6,219
Antidepresssants	85	117	2,203
Tranquilizers	101	100	1,182
Stimulants	56	137	3,786
Anxiolytic	24	25	552
Other	40	67	1,110
Days Supplied of Psychotropic Medications	81,937	108,197	1,777,154
Antidepresssants	21,032	25,742	382,083
Tranquilizers	36,172	29,308	282,217
Stimulants	16,196	38,300	899,558
Anxiolytic	1,154	1,105	29,834
Other			
Use Rates			
Percent of Members with a Mental health disorder Using Any Psychotropic Medication	72%	44%	55%
Antidepresssants	40%	18%	20%
Tranquilizers	47%	15%	11%
Stimulants	26%	21%	34%
Anxiolytic	11%	4%	5%
Other	19%	10%	10%
Average Days Supplied of Psychotropic Medications for Members with a Mental health disorder Using Any Psychotropic Medication	532	377	286
Antidepresssants	247	220	173
Tranquilizers	358	293	239
Stimulants	289	280	238
Anxiolytic	48	44	54
Other	185	205	165

For children with mental health disorders and using a psychotropic medication, the average days of medication supplied was evaluated. Among children with mental health disorders using a psychotropic medication, children in residential placement (532 days per year) and family foster care placement (377 days per year) had more intensive psychotropic medication use compared with children in the low-income Medicaid comparison group (286 days per year). Medication days per year may be greater than 365 because some children may be using more than one medication. Multiple coexisting mental health disorders and use of more than one type of psychotropic medication was not evaluated in this study but would be recommended for a future study.

Figure 9 describes the intensity of psychotropic medication use for those children with a serious mental health disorder and any psychotropic medication use. Children with a serious mental health disorder and any psychotropic medication use had more intensive medication use in residential placement (531 days per year) than children in family foster care (465 days per year) or the low-income comparison group (366 days per year). The higher intensity between children in out-of-home placement and low-income comparison group was in all age groups and by gender. Males with a serious mental health disorder who used a psychotropic medication had more intensive medication use compared with females in each of the study groups. This result could be impacted by multiple coexisting mental health disorders in these children. The occurrence of coexisting disorders was not evaluated in this study.

Figure 9. Intensity (days supplied per member using) of Psychotropic Medication Use for Children with Serious Mental Illness by Age, Gender, and Study Group, SFY2007.

Note: Among the children with serious mental health disorder, there were no children age 1-2 or 3-6 in residential placement. The denominator is members with serious mental illness who used a psychotropic medication.



Payments per Member per Month

Table 17 and Appendix 6 at the end of this report summarize Medicaid payments for children in out-of-home placement and the low-income comparison group.

The 1,344 children in out-of-home placement incurred $22.3 million in Medicaid payments during SFY2007; $10 million for children in residential placement and $12.3 million for children in family foster care. Children in residential placement had the highest rate of payment ($3,415 PMPM) compared with children in family foster care ($1,020 PMPM) or the low-income comparison group ($176 PMPM).

Payments were separated by Medicaid category of service. Services that are commonly provided to all children were distinguished from services that are provided primarily to special populations covered by Medicaid. These services are less prevalent in other low-income Medicaid children and virtually do not exist in children covered under commercial insurance. Appendix 6 at the end of this report provides the detail by category of service for these services. These special services accounted for $7.6 million (76%) for children in residential placement, $7.9 million (64%) for children in family foster care, and $24.5 million (19%) for low-income comparison group payments.

After removing services unique to special Medicaid populations, the payment rate for children in residential placement ($807 PMPM) was more than double the payment rate for children in family foster care ($369 PMPM) and more than five times the payment rate for the low-income comparison group ($142 PMPM).

Table 17. Payment Rates per Member per Month (PMPM) by Study Group, SFY2007

	Payments			Payments PMPM		
Medicaid Categories of Service	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**
Total: All Services	$9,954,968	$12,327,179	$126,116,664	$3,415	$1,020	$176
Services Used by All Children Covered by Medicaid	$2,352,414	$4,462,362	$101,661,835	$807	$369	$142
Services Used Primarily by Special Populations Covered by Medicaid	$7,602,554	$7,864,817	$24,454,829	$2,608	$651	$34

Children in both residential and family foster care had higher payments PMPM in every category of service compared with the low-income Medicaid comparison group. Among services common to all children enrolled in Medicaid, primary drivers of the higher payments for children in out-of-home placement were inpatient hospital, inpatient psychiatric, outpatient hospital, prescription drugs, mental health centers, and psychology claims.

DISCUSSION AND NEXT STEPS

A new and broader definition of child health was recently proposed in an Institute of Medicine (IOM) report:

> *Children's health should be defined as the extent to which individual children or groups of children are able or enabled to (a) develop and realize their potential, (b) satisfy their needs, and (c) develop the capabilities to allow them to interact successfully with their biological, physical, and social environments.*[15]

This was the first NH CHIS study of children in out-of-home placement enrolled in Medicaid in New Hampshire. Children in residential placement and family foster care were compared with other low-income children enrolled in Medicaid during SFY2007. A variety of health care measures based on administrative enrollment and claims data were evaluated.

The results of this NH CHIS study indicate that children in out-of-home placement in New Hampshire have significant problems with both physical and mental health. The rate of occurrence of some common acute illnesses (e.g. upper respiratory infections) was similar for children in out-of-home placement compared with the low-income comparison group. However, children in out-of-home placement had higher prevalence of nutritional or metabolic disorders, mental health disorders and mental retardation, epilepsy, convulsions, blindness and vision problems, and congenital anomalies. Regardless of age, children in residential placement had 4 times the relative disease burden and children in family foster care had 2 times the relative disease burden compared with children in the low-income comparison group. The finding of significant physical and mental health problems among the New Hampshire children in out-of-home placement is consistent with prior studies of children in foster care.[3,4,5,6]

The physical and mental health conditions for children in out-of-home placement were associated with higher utilization of services and higher payments. Children in out-of-home placement were more likely to be hospitalized (often for mental health disorders) and use the outpatient emergency department more than other children. Use of medications was higher among children in out-of-home placement. After excluding private non-medical institution claims and other special services unique to special Medicaid populations, payments for children in out-of-home placement were higher than other low-income children enrolled in Medicaid. Payments for services provided for mental health were significant drivers of the remaining differences.

Children in out-of-home placement were more likely to have had a preventive well-child visit during SFY2007 compared with the low-income comparison group. Children in out-of-home placement were more likely to have a claim indicating an immunization and screening for infectious disease and were more likely to have had a dental service and had more dental services. These results indicate that children in out-of-home placement were getting preventive care at higher rates than other chil-

dren in NH Medicaid or national averages. However, these findings could also indicate that children in out-of-home placement had unmet need (e.g. delayed immunization, dental care) that are being met after placement. While rates were better than the comparison averages, not all children in out-of-home placement had a well-child preventive visit and rates declined rapidly with age. About one-third of adolescents in out-of-home placement did not have an indication of a well-child preventive visit during the year. Paradoxically, the adolescent age group, with lower rate of preventive visit, had higher rates of inpatient hospitalization and outpatient emergency department use compared with younger children. The decline in preventive visit rates with increasing age was found not only in the out-of-home placement group but also in the low-income comparison group. A NH CHIS study of children who do not have a preventive visit is planned and evaluating children in out-of-home placement who do not have a preventive well-child visit may be informative.

The prevalence of some type of mental health disorder was high in children in residential placement (90%) and family foster care (68%) compared with other low-income children (20%) covered by Medicaid. More than one-third of the children in residential placement had at least one serious mental health disorder. Children with mental health disorders in out-of-home placement averaged more inpatient hospitalization days, more emergency department visits, more psychotherapy and other mental health specialist visits and services compared with other low-income Medicaid children with mental health disorders. These findings may reflect both a higher severity of mental health disorder and multiple coexisting mental health disorders for children in out-of-home placement. A recommendation would be to evaluate the occurrence of multiple coexisting conditions for children in out-of-home placement. A NH CHIS study of mental health disorders in children is planned.

Children in out-of-home placement with serious mental health disorders had more intensive psychotherapeutic drug use (averaged more days supplied) compared with the low-income comparison group and the difference was greatest in the residential placement group. This may reflect efforts to treat more coexisting mental health disorders. Another recent study of children in foster care covered by Medicaid indicated that children were receiving psychotropic medication at greater than 3 times the rate of other low-income Medicaid children.[16] That study indicated that 41 percent of the children in foster care received 3 different classes of psychotropic drugs. A recommendation would be to evaluate in more detail use of multiple psychotropic medications by specific type of medication for children in NH foster care.

Adjusting for age, gender, and total duration in out-of-home placement, children in residential placement were 2.4 times more likely to have four or more placements compared with children in family foster care. These results indicate that continuity of placement might be an issue for some NH children in out-of-home placement. Changes in placement sometimes reflect efforts to achieve case-plan goals and may in fact be in the best interest of the child. Previous studies have identified an association between lack of placement stability and increased prevalence of behavioral problems, use of mental health services, and cost.[17,18]

This study did not evaluate the impact of number of placements on physical and mental health status, utilization, or payment PMPM rates. A recommendation

would be to evaluate the relationship between number of placements, health status, and utilization.

Next Steps

The focus of this first NH CHIS study of New Hampshire children in out-of-home placement was to describe the New Hampshire population health status, mental health disorders, utilization, payments, preventive visits, and use of medications using administrative claims data. The results suggest possible additional studies and comparisons.

- While preventive well-child visit rates were higher for children in out-of-home placement they declined with age and one-third of adolescent children in out-of-home placement had no evidence of any preventive well-child visit during the year. Evaluating the factors associated with lack of a well-child preventive visit may be informative.

- Children in out-of-home placement were more likely to have at least one serious mental health disorder and had more intensive use of psychotherapeutic drugs. Evaluating coexisting mental health disorders and use of multiple psychotherapeutic drugs may be informative as it pertains to current issues related to medication use among children.

- Children in out-of-home placement care often have multiple placements, which may lead to discontinuity of care issues, which has been shown to be related to increased prevalence of behavioral problems in other studies. Evaluating the utilization rates, payments PMPM, and prevalence of mental health disorders by duration in out-of-home placement and number of placements can be used to quantify this relationship in the NH population.

APPENDICES

Appendix 1: Children in Out-of-Home Placement in New Hampshire - Study Methods

This study was based on administrative eligibility and claims data from New Hampshire Medicaid for SFY2007 (July 2006-June 2007); FY2006 data was also used for the HEDIS access to primary care practitioner measures that require a two-year time window for children ages 7-11 and 12-18.

1. Data acquisition and preparation. Children in out-of-home placement were identified from NH DCYF, which also provided information on type of placement (residential placement or family foster care), length in foster care, and number of placements. Exclusions were made from both the out-of-home and low-income Medicaid groups to improve validity of rate comparisons. Children in out-of-home placement were assigned to "residential placement" and "family foster care" study groups based on the type of placement during the last spell provided by DCYF.

Placement type was based on TYPE_CODE of last spell in the DCYF data:
Residential Placement (CC, MD) and Family Foster Care (FC, KC). If the TYPE_CODE was MX (mixed) then the LASTPLACE coding was used to assign the child to residential placement or family foster care per discussion with DCYF.

2. Study Exclusions. The SFY2007 experience of three New Hampshire populations was studied: children in residential placement enrolled in Medicaid, children in family foster care placement enrolled in Medicaid, and children enrolled in low-income Medicaid eligibility groups but not in foster care. The following exclusions were made from the study populations:

- Children with severe disabilities (e.g., Katie Becket program, aid to needy blind) were excluded from this study. This included severely disabled (AID 2B,2C,2D,2K), physical disabled (AID 30,31,32,70,71,72,83,84), and mentally disabled (AID 50,51,52,82,83) eligibility groups. These children were excluded because their access to preventive services, utilization of services, and payment profiles would be dramatically different from other children enrolled in Medicaid, SCHIP, or NH CHIS commercial plans.

- Children enrolled in SCHIP were excluded.

- Children in out-of-home placement with no Medicaid ID in DCYF file or could not be linked to FY2007 Medicaid enrollment were excluded.

- Infants under the age of one and children over age 18 were excluded from the study. Children over age 18 were excluded for consistency with other NH CHIS reports on children. Infants under the age of one were excluded because of the large number and impact that newborns would have on utilization and payment measure for the low-income child comparison group.

- Children in out-of-home placement who could not be assigned to a placement type (residential placement or family foster care).

FY2007 Out-of-Home Placement Children - Study Exclusion Process

FY2007 DCYF Client Records	Client Records Excluded	Reason for Exclusion
1,488		Total client IDs
1,477	11	Client IDs with No Medicaid IDs
1,443	34	Not linked to Medicaid FY2007 enrollment
1,440	3	Enrolled in SCHIP
1,394	46	Infants, age=0
1,361	33	Age over 18
1,357	4	2 severely disabled, 1 physically disabled, 1 mentally disabled eligibility category
1,344	13	Could not be assigned to placement type residential or family foster care

In total, 144 (10%) of the 1,488 children in out-of-home placement during SFY2007 were excluded from the study.

For the low-income comparison group, the same exclusions were made. In addition, any child in the low-income comparison group who, at anytime during the year, was in an eligibility category (AID 40,41,42) associated with juvenile justice, or out-of-home placement that did not link to DCYF data, was excluded from the study comparison group.

3. Member Assignment. Because members may change age, location of residence, eligibility grouping, or poverty level status during the year, each member was assigned to one and only one category for the fiscal year. Their eligibility group, Health Analysis Area, and poverty level on the last day of the last month enrolled and their age on the first day of the last month enrolled were used. This methodology is consistent with other NH CHIS reporting.

4. Age groups and gender. Consistent with other NH CHIS reporting a child was defined by age 0-18 years. The cutoff at age 18 is requested by New Hampshire DHHS and corresponds to the definition of child for Medicaid eligibility purposes. Age groups used for reporting were 1-2 (12-35 months), 3-6 (36 months-6 years), 7-11 years, and 12-18 years.

5. NH Medicaid Health Service Areas. Aggregation of zip codes based on New Hampshire Medicaid Health Service Area (HSA) for NH Medicaid enrollees was utilized (Appendix 3). Health Service Areas are relevant to how health care is delivered in NH compared to counties.

6. Denominator for Population-Based Rates. This study was based on rates of use per member population covered. Not all members are covered for a full year. Therefore, a person covered for a full 12 months might be twice as likely to have preventive and other medical services during the year compared with a person covered for only 6 months. Standard methods to adjust denominators for differences in expo-

sure time were used. Thus, average members (cumulative member months divided by 12) was utilized as denominator for rates in this study. Other measures in this study are based on HEDIS methods which include a subset of children continuously covered during the period; it is not necessary to use member month person-time as a denominator for these measures.

7. Childrens' and Adolescents' Access to Primary Care Practitioners HEDIS measure. The HEDIS access to primary care practitioners is not a measure of preventive service; the visits reported include both visits for preventive service and visits for medical illness and other problems. The coding used to identify the percent of members who had a visit with a primary care practitioner was modified from exact HEDIS specifications after review of claims data to ensure that primary care visits in hospital-clinic and rural health clinic settings were included.

CPT codes 99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215, 99241, 99242, 99243, 99244, 99245, 99341, 99342, 99343, 99344, 99345, 99346, 99347, 99348, 99349, 99350, 99381, 99382, 99383, 99384, 99385, 99391, 99392, 99393, 99394, 99395, 99401, 99402, 99403, 99404, 99411, 99412, 99420, 99429, 99499, 99432
or any diagnosis code V202, V700, V703, V705, V706, V708, V709 or CPT/HCPC codes T1015, 99354, 99355, 99432
or UB revenue codes 0510 - 0529 or 0770, 0771, 0779, 0983
and MHIC provider specialty codes:
0101 Hospital / General
0105 Hospital / Ancillary
0201 Hospital / Outpatient
1002 Misc Facility / Urgent Care Center
1009 Misc Facility / Misc Facility Use
1101 Clinic Facilities / Services
1201 Rural Health Centers
3001 Primary Care - Family / General Practice
3101 Primary Care - Internal Medicine
3201 Primary Care - Pediatrics
5201 Licensed Nurses (includes NP)
4601 Physicians Assistants
Excludes inpatient hospital claims and emergency department services claims
Requires 11+ Months Enrollment, and Enrolled in the final month of the measurement year (SFY2007)

8. Well-Child Visits in the First 15 Months of Life HEDIS measure. The HEDIS well-child visit measures specific primary care practitioner visits identified as well-care visits. Unlike the access to primary care practitioner measure, which includes both visits for preventive services and for medical illness, this measure is designed to more strictly identify preventive care visits. CPT and diagnosis codes used are identical to HEDIS specifications and the CPT codes are age group specific. For this study provider specialty codes include primary care well-care visits that might occur in the hospital-clinic and rural health clinic settings.

CPT 99381, 99382, 99391, 99392, 99432 (well-child visit during first 15 months of life)
CPT 99382, 99383, 99392, 99393 (well-child visit age 25 months to 6 years)
CPT 99383, 99384, 99385, 99393, 99394, 99395 (adolescent well care visits)
or any diagnosis code V202, V700, V703, V705, V706, V708, V709
and MHIC provider specialty codes:
0101 Hospital / General
0105 Hospital / Ancillary
0201 Hospital / Outpatient

1002 Misc Facility / Urgent Care Center
1009 Misc Facility / Misc Facility Use
1101 Clinic Facilities / Services
1201 Rural Health Centers
3001 Primary Care - Family / General Practice
3101 Primary Care - Internal Medicine
3201 Primary Care - Pediatrics
5201 Licensed Nurses (includes NP)
4601 Physicians Assistants
3906 Obstetrics / Gynecology (HEDIS specifications include OB/GYN only for the adolescent well-child measure)
Excludes inpatient hospital claims and emergency department services claims
Requires 13+ months enrollment from Birth+31 days to Birth+455 days (well-child visit during first 15 months of life)
Requires 11+ Months Enrollment, and enrolled in the final month of the measurement year (SFY2007) for other age groups

9. Emergency Department Visit Definition. This study focused on outpatient hospital emergency department visits. Emergency department visits were selected based on UB revenue codes 0450-0459 or CPT codes 99281-99285. Visits resulting in inpatient hospitalization were excluded by using Medicaid category of service codes 1,3,103. This definition includes revenue code 0456 hospital urgent care center visits which are sometimes excluded from other studies.

10. Office/Clinic Visit Definition. Office or clinic visits were identified were selected based on CPT codes.

99201, 99202, 99203, 99204, 99205, 99211, 99212, 99213, 99214, 99215, 99354, 99355, 99381, 99382, 99383, 99384, 99385, 99386, 99387, 99391, 99392, 99393, 99394, 99395, 99396, 99397, 99401, 99402, 99403, 99404, 99411, 99412, 99420, 99429, 99432, T1015, 99241, 99242, 99243, 99244, 99245 or UB revenue codes 510-519, 520-529, or 983.

This definition was based on codes found in NCQA HEDIS specifications plus additional codes for NH rural health centers, federally qualified health centers, and hospital facility based primary care clinics.

11. Clinical Classification Software (CCS). Prevalence of diseases and disorders were assigned using the ICD-9-CM (International Classification of Diseases, Ninth Revision) diagnosis on the administrative claims. ICD-9-CM were aggregated into clinically meaningful groupings using the Clinical Classification Software (CCS) for ICD-9-CM from the Agency for Healthcare Research and Quality (AHRQ). One example, CCS 92 Otitis media and related conditions, is provided below.

Procedure	ICD-9-CM codes
92 Otitis media and related conditions	381.00, 381.01, 381.02, 381.03, 381.04, 381.05, 381.06, 381.10, 381.19, 381.20, 381.29, 38.13, 38.14, 381.50, 381.51, 381.52, 381.60, 381.61, 381.62, 381.63, 381.7, 381.81, 381.89, 381.9, 382.00, 382.01, 382.02, 382.1, 382.2, 382.3, 382.4, 382.9, 383.00, 383.01, 383.02, 383.1, 383.20, 383.21, 383.22, 383.30, 383.31, 383.32, 383.33, 383.81, 383.89, 383.9, 384.20, 384.21, 384.22, 384.23, 384.24, 384.25, 384.81, 384.82, 384.9, 385.00, 385.01, 385.02, 385.03, 385.09, 385.10, 385.11, 385.12, 385.13, 385.19, 385.21, 385.22, 385.23, 385.24, 387.0, 387.1, 387.2, 387.8, 387.9

12. Clinical Risk Grouper (CRG)

In order to compare the overall burden of disease the 3M Health Systems Clinical Risk Grouper (CRG) was applied to the administrative claims data.[14] The CRG system was designed for relative risk assessment. The CRG software uses all ICD-9-CM diagnosis codes from all health care encounters and assigns to a diagnostic category (acute or chronic) and a body system. Each individual is grouped to a defined health status group then to a CRG category and severity level if chronically ill. Over 250 CRG categories are further grouped into higher levels of risk grouping resulting in nine major categories of risk. Each CRG is assigned a relative risk weight based on a common Medicaid weight table provided by 3M.

Example of CRG Assignments for a person with both diabetes and asthma

CRG	61425
CRG Description	Diabetes and Asthma Level - 5
ACRG1	614205
ACRG1_Description	Pair - Diabetes and Other Moderate Chronic Disease Level - 5
ACRG2	6255
ACRG2_Description	Pair - One Dominant Chronic Disease and Moderate Chronic Disease or a Minor Chronic Disease
ACRG3	64
ACRG3_Description	Significant Chronic Disease in Multiple Organ Systems Level - 4
Core Health Status Group	6
Core Health Status Description	Disease in Chronic Multiple Organ Systems

*CRG assigned members to a "healthy" CRG category which includes both members with no encounters and members with encounters for preventive service and minor conditions. All members are assigned a relative risk weight. Members classified as healthy are assigned a very low risk weight.

A small number of children (4 in residential placement, 2 in family foster care, and 103 in the low-income comparison group) were not linked to a CRG assignment.

13. Mental Health Disorder ICD-9-CM Diagnosis Coding. The diagnostic groupings used to report mental health disorders in children in this report is based on definitions used in other NH CHIS mental health disorder reports and were derived from a report prepared for the Substance Abuse and Mental Health Services Administration. (Defining Mental Health and/or Substance Abuse (MH/SA) Claimants. Report prepared for the Substance Abuse and Mental Health Services Administration. October, 2003. RTI International and The Medstat Group.
http://www.nri-inc.org/OSA/Download/Appendix%20_a_Defining_MH-SA_Claimants.pdf)

Serious Mental Health Disorder

01 SCHIZOPHRENIC DISORDERS 295
02 MAJOR DEPRESSION 296.2, 296.3
03 BIPOLAR & OTHER AFFECTIVE PSYCHOSES
- Manic Disorders 296.0, 296.1
- Bipolar Affective Disorders 296.4-296.7
- Other and unspecified manic-depressive disorders 296.8
- Other and unspecified affective psychoses 296.9

04 OTHER PSYCHOSES
- Transient organic psychotic conditions 293
- Other organic psychotic conditions, chronic 294

Paranoid states or delusional disorders 297
Other non-organic psychoses 298
Psychoses with origin specific to childhood 299

Other Mental Health Disorders

05 STRESS & ADJUSTMENT
Acute reaction to stress 308
Adjustment reaction 309
06 PERSONALITY DISORDER 301
07 DISTURBANCE OF CONDUCT 312
08 DISTURBANCE OF EMOTIONS 313
09 ADHD Hyperkinetic 314
10 NEUROTIC DISORDERS 300
11 DEPRESSION NEC 311
12 OTHER MENTAL HEALTH DISORDERS
Sexual deviations and disorders 302
Physiological malfunction arising from mental factors 306
Special symptoms or syndromes, not elsewhere specified 307
Specific non-psychotic mental health disorders due to organic brain damaged 310
Psychotic factors associated with diseases specified elsewhere 316

Certain mental health disorders were also separated for special reporting for this foster care study because of their potential for higher prevalence in foster care children. These included:

21 Post-traumatic stress disorder (309.81)
22 Substance abuse/alcohol and drug-related based on SAMHSA definition (291,303,3050,292,304,305.2-305.9,265.2,357.5, 357.6,425.5,535.3 571.0-571.3,648.3,655.5,760.7,779.5,790.3,962.0,965.0,967-970, 977.0,977.3,980). Tobacco use disorder (305.1) was not included as substance abuse.
23 Developmental delay (313.23)
24 Learning disorders (315)
25 Reactive attachment disorders (313.89)
26 Mental retardation (317-319)

All mental health disorder reporting is based on the existence of ICD-9-CM clinical diagnoses coding in the administrative claims data.

14. Mental Health Specialist Visits and Services. The mental health specialist visit for this CHIP report was based on provider specialty code and included a broad range of mental health specialists (e.g., psychiatry, psychology, licensed clinical social workers, mental health centers, licensed social workers, licensed counselors, and clinical nurse specialists with psychology identified. MHIC codes used to identify these specialties were:

1301 Mental Health Center
1302 General Mental Health
3401 Psychiatry
5101 Psychologists
5202 Psychiatric Nurse
5301 Social Workers (includes licensed clinical social workers)
5502 Misc. Medical Professional - General Mental Health

The mental health specialist services were further subset into three sub-categories:

(1) Psychotherapy (billed to all three plan types using CPT 90804-90857),
(2) Diagnostic evaluation (e.g., CPT 90801), medication management (e.g., CPT 90862), and testing (e.g., CPT 96101), and other mental service CPT codes billed to all three plan types.
(3) Mental specialist services unique to Medicaid (e.g., community mental health support H0036, case management T1016, and crises intervention services H2011), and other HCPC codes primarily billed to Medicaid only.

15. Psychotropic Medication Use Classification. Administrative pharmacy claims contain the National Drug Code (NDC), an 11-digit code that identifies the manufacturer, product, strength, dosage form, formulation, and package sizes for medications. There are approximately 200,000 different NDC codes.

Maine Health Information Center uses REDBOOK™ to aggregate NDC codes into meaningful therapeutic categories to develop reporting and analysis. The following categories derived from REDBOOK™ were used for the study of psychotropic medications in this study.

- 2410 CNS-Antidepressants (e.g. Zoloft / sertraline)
- 2610 CNS-Antipsychotics-Tranquilizers (e.g. Risperdol / risperidone)
- 2810 CNS-Stimulants (e.g. Adderall XR / amphetamine)
- 3010 CNS-Anxiolytics, sedatives, hypnotics (e.g. Ativan / lorazepam)
- 3210 CNS-Other (e.g. Strattera / atomoxetine)

The pharmacy claims do not contain diagnosis or indication information. To some extent the indication of the medication can be inferred by the type of medication. However, many medications have multiple indications and disorders may be treated by medications that are found in different REDBOOK drug categories. For example, Zoloft may be used to treat depression or obsessive compulsive disorder. Stimulants such as Adderall XR are used to treat ADHD, but Strattera is a non-stimulant used to treat ADHD.

16. Payments. Payments were identified from the claims data. Both plan payments and member responsibilities reported on claims were included. NH Medicaid may make retroactive payment settlements with hospitals. This study is based only on the payments reflected in the administrative claim files and could not adjust for any retroactive payment settlements.

A previous NH CHIS study identified a large volume of services and payments which are covered by Medicaid but rarely or never covered by private health insurance plans. These included school-based special education services, services for the developmentally disabled, services provided through NH Division for Children, Youth, and Families (DCYF). These services are potentially common with significant payments in special Medicaid populations such as foster care. Therefore, payments for these services were reported separately for the study populations. Services marked for separate reporting by Medicaid Category of Service (COS) included:

- Clinic services (COS 25) were determined to be school-based services primarily special education. Day habilitation (COS 60) are day services for the developmentally disabled and home and community based care for the developmentally impaired (COS 65,66) are waiver services.

Crisis intervention (COS 72), intensive home and community services (COS 73), child health support services (COS 74), home-based therapy (COS 76), and placement ser-vices (COS 77) are all special services provided through the Division for Children, Youth, and Families (DCYF). ICF services for the mentally retarded (COS 102) are institutional services for the mentally retarded and private non-medical institution for children (COS 78) are residential institutional care for children.

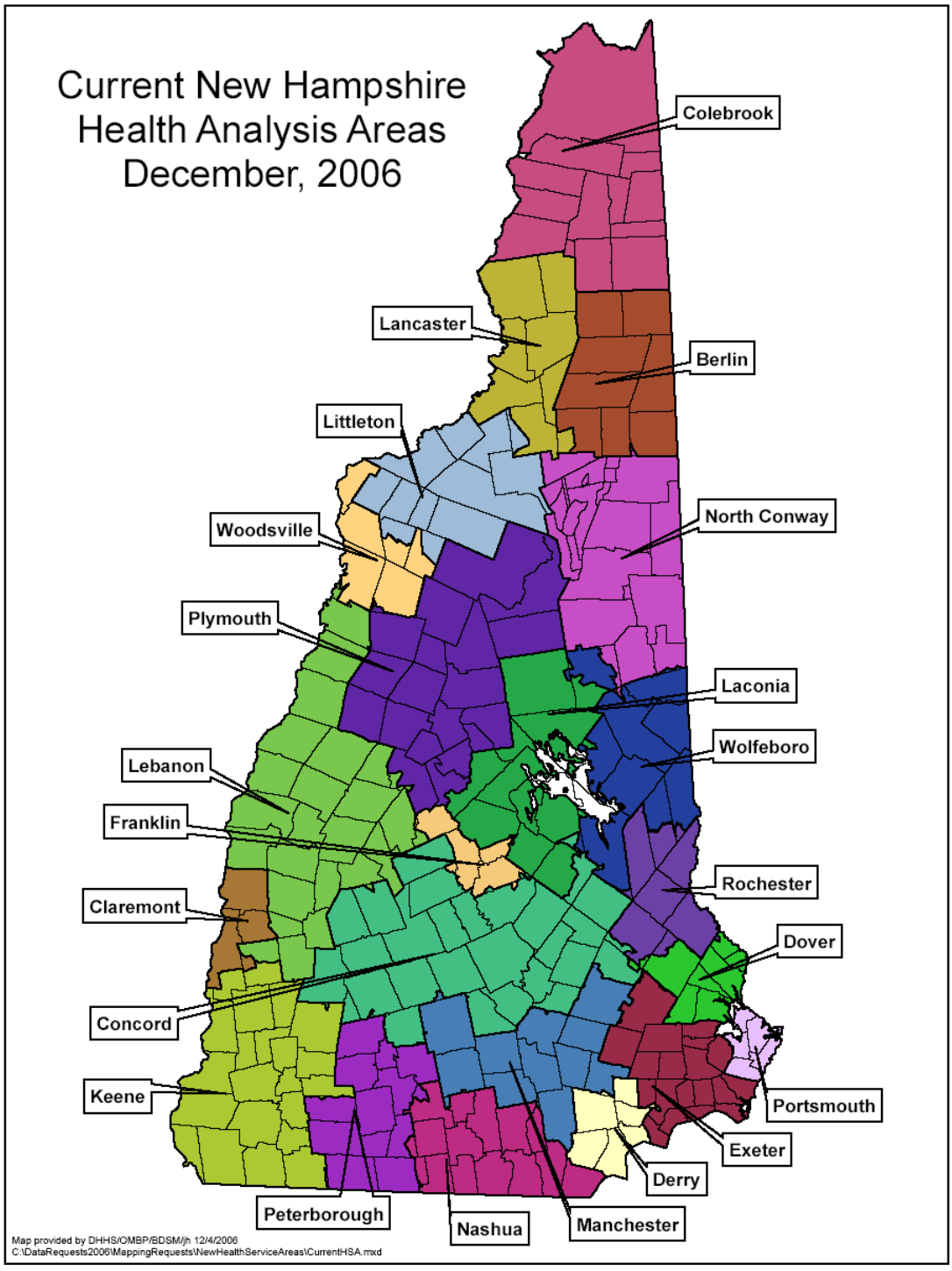
Appendix 2: Medicaid Eligibility Groups

Source: New Hampshire Comprehensive Health Information System Special Project: Defining Medicaid Eligibility Groups. Institute for Health Policy, Muskie School of Public Service, University of Southern Maine.

Aid Category w Code	Medicaid Benefits	Collapsed Groupings
10 OAA/CATEGORICALLY NEEDY	Yes	Elderly
11 OAA/MONEY PAYMENT/CATEGORICALLY NEEDY	Yes	Elderly
12 OAA/MEDICALLY NEEDY	Yes	Elderly
20 AFDC/CATEGORICALLY NEEDY	Yes	Low-income Adult/Child*
21 AFDC/MONEY PAYMENT/CATEGORICALLY NEEDY	Yes	Low-income Adult/Child
22 AFDC/MEDICALLY NEEDY	Yes	Low-income Adult/Child
24 AFDC/REG POV LVL/CAT NEEDY 185%FPL	Yes	Low-income Adult/Child
27 HEALTHY KIDS GOLD - EXPANDED ELIGIBILITY	Yes	Low-income Child
28 AFDC/POVLEV PREG WOMAN/CHILD/CAT/NEEDY170% FPL	Yes	Low-income Adult/Child
2B AFDC/HOME CARE-CHILD/SEVERE DISA/MEDI NEEDY	Yes	Severely Disabled Child
2C AFDC/CHILD WITH SEVERE DISABILITIES/CAT NEEDY	Yes	Severely Disabled Child
2D AFDC/CHILD WITH SEVERE DISABILITIES/MEDI NEEDY	Yes	Severely Disabled Child
2E AFDC/EXTENDED MA/FIRST 6 MONTH PERIOD/CAT NEEDY	Yes	Low-income Adult/Child
2F AFDC/EXT MA/SCND 6 MNTH PER/CAT NEEDY	Yes	Low-income Adult/Child
2H AFDC/POV LVL PREG WMN/CHILD/CAT NDY/REF170% FPL	Yes	Low-income Adult/Child
2K AFDC/HOME CARE-CHILD SEV DIS/CAT. NDY FOR INSTI	Yes	Severely Disabled Child
2U AFDC/AFDC-UP/MONEY PAYMENT/CATEGORICALLY NDY	Yes	Low-income Adult/Child
2V AFDC/AFDC-UP/CATEGORICALLY NEEDY/MA	Yes	Low-income Adult/Child
2W AFDC/AFDC-UP/MEDICALLY NEEDY	Yes	Low-income Adult/Child
2X ADFC/POV LVL PREG WOMEN/POV LVL CHLD CAT NEEDY	Yes	Low-income Adult/Child
30 ANB/CATEGORICALLY NEEDY	Yes	Disabled Physical
31 ANB/MONEY PAYMENT/CATEGORICALLY NEEDY	Yes	Disabled Physical
32 ANB/MEDICALLY NEEDY	Yes	Disabled Physical
40 IV-E-OR-MA /ADOPT SUB-CAT NEEDY	Yes	Low-income Child
41 AFDC/FC OR MONEY PAYMENT/CATEGORICALLY NDY	Yes	Low-income Child
42 AFDC/FC OR MEDICALLY NEEDY	Yes	Low-income Child
50 APTD/MENTAL/CATEGORICALLY NEEDY	Yes	Disabled Mental
51 APTD/MENTAL/MONEY PAYMENT/CATEGORICALLY NEEDY	Yes	Disabled Mental
52 APTD/MENTAL/MEDICALLY NEEDY	Yes	Disabled Mental
61 HEALTHY KIDS SILVER	No	Omitted
66 QUALIFIED MEDICARE BENEFICIARY - SLMB120	No	Omitted
67 QUALIFIED MEDICARE BENEFICIARY - SLMB135	No	Omitted
68 QUALIFIED MEDICARE BENEFICIARY - QDWI	No	Omitted
69 QMB	No	Omitted
70 APTD/PHYSICAL/CATEGORICALLY NEEDY	Yes	Disabled Physical
71 APTD/PHYSICAL/MONEY PAYMENT	Yes	Disabled Physical
72 APTD-PHYSICAL/MEDICALLY NEEDY	Yes	Disabled Physical
80 MEAD WITH ANB/APTD APPROVAL - BLIND	Yes	Disabled Physical
81 MEAD WITH ANB/APTD APPROVAL - PHYSICAL	Yes	Disabled Physical
82 MEAD WITH ANB/APTD APPROVAL - MENTAL	Yes	Disabled Mental
83 MEAD ONLY APPROVAL - BLIND	Yes	Disabled Physical
84 MEAD ONLY APPROVAL - PHYSICAL	Yes	Disabled Physical
85 MEAD ONLY APPROVAL - MENTAL	Yes	Disabled Mental

* Age at beginning of the last month of reporting period is used to designate member as Child <=18 or Adult >18.

Appendix 3: Health Analysis Area Definitions



Appendix 4: Prevalence Rates of Disease by CCS Categories

Using the diagnosis on the administrative claims, ED visits were aggregated into clinically meaningful groupings using the Clinical Classification Software (CCS) for ICD-9-CM from the Agency for Healthcare Research and Quality (AHRQ).[13]

*Average members (member months / 12) is used as denominator for prevalence rates. This is the standard for all NH CHIS reporting. Because children enrolled in SCHIP are covered for a shorter period of time during the year the SCHIP rates reported will be higher than rates calculated using unique member count as denominator.

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Infectious and parasitic diseases (total)		27.6% (67)	21.5% (217)	16.5% (9,830)
1	Tuberculosis	0.4% (1)	0.0% (0)	0.0% (2)
2	Septicemia (except in labor)	0.0% (0)	0.0% (0)	0.0% (17)
3	Bacterial infection, unspecified site	0.0% (0)	0.4% (4)	0.3% (170)
4	Mycoses	2.1% (5)	2.1% (21)	1.3% (782)
5	HIV infection	0.0% (0)	0.1% (1)	0.0% (10)
6	Hepatitis	0.0% (0)	0.2% (2)	0.0% (19)
7	Viral infections	9.1% (22)	10.6% (107)	9.5% (5,642)
8	Other infections, including parasitic	0.4% (1)	0.8% (8)	0.7% (422)
9	Sexually transmitted infections (not HIV or hepatitis)	0.4% (1)	0.0% ()	0.0% (20)
10	Immunizations and screening for infectious diseases	18.1% (44)	10.1% (102)	5.9% (3,505)
Neoplasms (total)		2.1% (5)	0.5% (5)	0.9% (556)
11	Cancer of head and neck	0.0% (0)	0.0% (0)	0.0% (2)
16	Cancer of liver and intrahepatic bile duct	0.0% (0)	0.0% (0)	0.0% (2)
17	Cancer of pancreas	0.0% (0)	0.0% (0)	0.0% (3)
18	Cancer of other GI organs, peritoneum	0.0% (0)	0.0% (0)	0.0% (1)
19	Cancer of bronchus, lung	0.0% (0)	0.0% (0)	0.0% (1)
20	Cancer, other respiratory and intrathoracic	0.0% (0)	0.0% (0)	0.0% (1)
21	Cancer of bone and connective tissue	0.0% (0)	0.0% (0)	0.0% (7)
22	Melanomas of skin	0.0% (0)	0.0% (0)	0.0% (2)
23	Other non-epithelial cancer of skin	0.0% (0)	0.0% (0)	0.0% (3)
24	Cancer of breast	0.0% (0)	0.0% (0)	0.0% (1)
26	Cancer of cervix	0.0% (0)	0.0% (0)	0.0% (3)
29	Cancer of prostate	0.0% (0)	0.0% (0)	0.0% (1)
33	Cancer of kidney and renal pelvis	0.0% (0)	0.0% (0)	0.0% (3)
35	Cancer of brain and nervous system	0.0% (0)	0.0% (0)	0.0% (9)
37	Hodgkin's disease	0.0% (0)	0.0% (0)	0.0% (3)
38	Non-Hodgkin's lymphoma	0.0% (0)	0.0% (0)	0.0% (4)
39	Leukemias	0.0% (0)	0.0% (0)	0.0% (24)
41	Cancer, other Unspecified primary	0.0% (0)	0.0% (0)	0.0% (23)
42	Secondary malignancies	0.0% (0)	0.0% (0)	0.0% (2)
44	Neoplasms of unspecified nature or uncertain behavior	0.8% (2)	0.1% (1)	0.2% (146)
45	Maintenance chemotherapy, radiotherapy	0.0% (0)	0.0% (0)	0.0% (10)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
47	Other unspecified benign neoplasm	1.6% (4)	0.5% (5)	0.6% (365)
Endocrine; nutritional; and metabolic diseases and immunity disorders (total)		12.8% (31)	9.5% (96)	4.0% (2,367)
48	Thyroid disorders	3.7% (9)	0.5% (5)	0.3% (152)
49	Diabetes mellitus without complication	0.4% (1)	0.3% (3)	0.3% (190)
50	Diabetes mellitus with complications	0.0% (0)	0.2% (2)	0.2% (117)
51	Other endocrine disorders	2.9% (7)	0.7% (7)	0.4% (266)
52	Nutritional deficiencies	0.8% (2)	0.1% (1)	0.1% (57)
53	Lipidosis	0.8% (2)	0.5% (5)	0.2% (130)
55	Fluid and electrolyte disorders	0.4% (1)	0.3% (3)	0.0% (23)
56	Cystic fibrosis	0.0% (0)	0.2% (2)	0.0% (16)
57	Immunity disorders	0.0% (0)	0.0% (0)	0.0% (23)
58	Other nutritional, endocrine, and metabolic disorders	6.2% (15)	7.5% (76)	2.8% (1,700)
Diseases of the blood and blood-forming organs (total)		0.0% (0)	0.8% (8)	0.6% (349)
59	Anemia	0.0% (0)	0.5% (5)	0.4% (250)
60	Acute posthemorrhagic anemia	0.0% (0)	0.0% (0)	0.0% (1)
61	Sickle cell anemia	0.0% (0)	0.0% (0)	0.0% (9)
62	Coagulation and hemorrhagic disorders	0.0% (0)	0.4% (4)	0.1% (70)
63	Disease of white blood cells	0.0% (0)	0.0% (0)	0.0% (21)
64	Other hematologic conditions	0.0% (0)	0.0% (0)	0.0% (10)
Mental illness (total)		85.2% (207)	74.6% (752)	20.8% (12,419)
65	Mental retardation	3.3% (8)	1.7% (17)	0.3% (205)
66	Alcohol-related mental health disorders	0.4% (1)	0.1% (1)	0.1% (63)
67	Substance-related mental health disorders	2.5% (6)	1.1% (11)	0.2% (125)
68	Senility and organic mental health disorders	0.4% (1)	0.6% (6)	0.1% (64)
69	Affective disorders	26.8% (65)	10.2% (103)	2.6% (1,550)
70	Schizophrenia and related disorders	3.3% (8)	1.3% (13)	0.6% (381)
71	Other psychoses	1.2% (3)	0.1% (1)	0.1% (38)
72	Anxiety, somatoform, dissociative, and personality disorders	35.0% (85)	18.8% (189)	3.1% (1,871)
73	Preadult disorders	33.8% (82)	19.3% (194)	8.2% (4,912)
74	Other mental conditions	46.9% (114)	54.1% (545)	10.3% (6,177)
75	Personal history of mental health disorder, mental and behavioral problems, observation and screening for m	1.2% (3)	1.8% (18)	0.5% (276)
Diseases of the nervous system and sense organs (total)		58.0% (141)	52.3% (527)	38.2% (22,778)
76	Meningitis (except that caused by tuberculosis or STD)	0.0% (0)	0.0% (0)	0.0% (10)
77	Encephalitis (except that caused by tuberculosis and STD)	0.0% (0)	0.0% (0)	0.0% (6)
78	Other CNS infection and poliomyelitis	2.9% (7)	0.1% (1)	0.0% (17)
80	Multiple sclerosis	0.0% (0)	0.0% (0)	0.0% (2)
81	Other hereditary and degenerative nervous system conditions	0.4% (1)	0.2% (2)	0.1% (80)
82	Paralysis	0.4% (1)	0.3% (3)	0.3% (155)
83	Epilepsy, convulsions	4.1% (10)	2.1% (21)	1.0% (617)
84	Headache, including migraine	5.4% (13)	1.7% (17)	2.4% (1,444)
85	Coma, stupor, and brain damage	0.4% (1)	0.4% (4)	0.1% (55)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
86	Cataract	0.0% (0)	0.0% (0)	0.1% (33)
87	Retinal detachments, defects, vascular occlusion, and retinopathy	0.4% (1)	0.3% (3)	0.1% (76)
88	Glaucoma	0.4% (1)	0.0% (0)	0.1% (44)
89	Blindness and vision defects	14.0% (34)	8.3% (84)	5.0% (2,987)
90	Inflammation, infection of eye (except that caused by tuberculosis and STD)	2.5% (6)	5.1% (51)	4.4% (2,635)
91	Other eye disorders	32.1% (78)	19.1% (192)	10.4% (6,221)
92	Otitis media and related conditions	8.2% (20)	22.7% (229)	17.4% (10,380)
93	Conditions associated with dizziness or vertigo	0.8% (2)	0.5% (5)	0.3% (199)
94	Other ear and sense organ disorders	8.6% (21)	10.1% (102)	6.9% (4,138)
95	Other nervous system disorders	4.5% (11)	2.7% (27)	1.2% (694)
Diseases of the circulatory system (total)		5.8% (14)	3.8% (38)	2.5% (1,465)
96	Heart valve disorders	0.8% (2)	0.8% (8)	0.5% (283)
97	Peri-, endo-, and myocarditis, cardiomyopathy (except that caused by tuberculosis and STD)	0.0% (0)	0.2% (2)	0.0% (13)
98	Essential hypertension	0.0% (0)	0.0% (0)	0.2% (93)
99	Hypertension with complications and secondary hypertension	0.4% (1)	0.0% (0)	0.0% (11)
100	Acute myocardial infarction	0.0% (0)	0.0% (0)	0.0% (1)
101	Coronary atherosclerosis and other heart diseases	0.0% (0)	0.0% (0)	0.0% (4)
102	Nonspecific chest pain	2.5% (6)	1.4% (14)	1.1% (649)
103	Pulmonary heart disease	0.0% (0)	0.0% (0)	0.0% (7)
104	Other and ill-defined heart disease	0.0% (0)	0.2% (2)	0.0% (15)
105	Conduction disorders	0.4% (1)	0.2% (2)	0.0% (21)
106	Cardiac dysrhythmias	1.6% (4)	0.7% (7)	0.4% (247)
107	Cardiac arrest and ventricular fibrillation	0.0% (0)	0.0% (0)	0.0% (1)
108	Congestive heart failure, nonhypertensive	0.0% (0)	0.0% (0)	0.0% (6)
109	Acute cerebrovascular disease	0.4% (1)	0.0% (0)	0.0% (11)
110	Occlusion or stenosis of precerebral arteries	0.0% (0)	0.0% (0)	0.0% (1)
111	Other and ill-defined cerebrovascular disease	0.0% (0)	0.0% (0)	0.0% (1)
112	Transient cerebral ischemia	0.0% (0)	0.0% (0)	0.0% (2)
113	Late effects of cerebrovascular disease	0.0% (0)	0.0% (0)	0.0% (7)
114	Peripheral and visceral atherosclerosis	0.4% (1)	0.0% (0)	0.0% (3)
115	Aortic, peripheral, and visceral artery aneurysms	0.0% (0)	0.0% (0)	0.0% (3)
116	Aortic and peripheral arterial embolism or thrombosis	0.0% (0)	0.0% (0)	0.0% (1)
117	Other circulatory disease	0.4% (1)	1.2% (12)	0.3% (188)
118	Phlebitis, thrombophlebitis and thromboembolism	0.4% (1)	0.0% (0)	0.0% (6)
119	Varicose veins of lower extremity	0.0% (0)	0.0% (0)	0.0% (2)
120	Hemorrhoids	0.0% (0)	0.0% (0)	0.0% (12)
121	Other disease of veins and lymphatics	0.0% (0)	0.0% (0)	0.0% (27)
Diseases of the respiratory system (total)		42.0% (102)	42.7% (430)	41.3% (24,683)
122	Pneumonia (except that caused by tuberculosis and STD)	3.7% (9)	1.6% (16)	2.0% (1,204)
123	Influenza	0.0% (0)	0.1% (1)	0.3% (194)
124	Acute and chronic tonsillitis	2.5% (6)	2.8% (28)	2.9% (1,713)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
125	Acute bronchitis	2.9% (7)	2.9% (29)	3.1% (1,856)
126	Other upper respiratory infections	29.2% (71)	30.3% (305)	29.9% (17,842)
127	Chronic obstructive pulmonary disease and bronchiectasis	2.9% (7)	1.4% (14)	1.5% (893)
128	Asthma	6.2% (15)	8.1% (82)	5.4% (3,194)
129	Aspiration pneumonitis, food/vomitus	0.4% (1)	0.1% (1)	0.0% (6)
130	Pleurisy, pneumothorax, pulmonary collapse	0.4% (1)	0.0% (0)	0.1% (46)
131	Respiratory failure, insufficiency, arrest (adult)	0.8% (2)	0.0% (0)	0.0% (29)
132	Lung disease due to external agents	0.0% (0)	0.0% (0)	0.0% (13)
133	Other lower respiratory disease	9.5% (23)	8.0% (81)	7.9% (4,701)
134	Other upper respiratory disease	7.8% (19)	6.7% (67)	4.8% (2,881)
Diseases of the digestive system (total)		16.1% (39)	11.7% (118)	10.1% (6,014)
135	Intestinal infection	1.2% (3)	1.2% (12)	1.3% (759)
136	Disorders of teeth and jaw	1.6% (4)	1.8% (18)	2.1% (1,251)
137	Disease of mouth, excluding dental	0.0% (0)	0.8% (8)	0.5% (325)
138	Esophageal disorders	2.5% (6)	1.4% (14)	0.8% (458)
139	Gastroduodenal ulcer (except hemorrhage)	0.0% (0)	0.0% (0)	0.0% (2)
140	Gastritis and duodenitis	0.0% (0)	0.4% (4)	0.2% (137)
141	Other disorders of stomach and duodenum	0.0% (0)	0.3% (3)	0.1% (64)
142	Appendicitis and other appendiceal conditions	0.4% (1)	0.0% (0)	0.1% (51)
143	Abdominal hernia	0.0% (0)	0.3% (3)	0.2% (126)
144	Regional enteritis and ulcerative colitis	0.8% (2)	0.2% (2)	0.1% (32)
145	Intestinal obstruction without hernia	0.4% (1)	0.0% (0)	0.0% (26)
146	Diverticulosis and diverticulitis	0.0% (0)	0.0% (0)	0.0% (1)
147	Anal and rectal conditions	0.0% (0)	0.2% (2)	0.1% (54)
148	Peritonitis and intestinal abscess	0.0% (0)	0.0% (0)	0.0% (3)
149	Biliary tract disease	0.4% (1)	0.0% (0)	0.0% (25)
151	Other Liver diseases	0.4% (1)	0.2% (2)	0.1% (78)
152	Pancreatic disorders (not diabetes)	0.4% (1)	0.0% (0)	0.0% (12)
153	Gastrointestinal hemorrhage	0.4% (1)	0.2% (2)	0.2% (120)
154	Noninfectious gastroenteritis	0.8% (2)	2.6% (26)	2.4% (1,413)
155	Other gastrointestinal disorders	9.5% (23)	4.9% (49)	3.5% (2,103)
Diseases of the genitourinary system (total)		19.8% (48)	8.9% (90)	7.3% (4,335)
156	Nephritis, nephrosis, renal sclerosis	0.0% (0)	0.0% (0)	0.1% (30)
157	Acute and unspecified renal failure	0.0% (0)	0.1% (1)	0.0% (8)
158	Chronic renal failure	0.0% (0)	0.0% (0)	0.0% (7)
159	Urinary tract infections	5.4% (13)	2.4% (24)	1.9% (1,151)
160	Calculus of urinary tract	0.0% (0)	0.0% (0)	0.1% (44)
161	Other disease of kidney and ureters	0.0% (0)	0.3% (3)	0.2% (135)
162	Other disease of bladder and urethra	0.0% (0)	0.3% (3)	0.1% (85)
163	Genitourinary symptoms and ill-defined conditions	9.1% (22)	3.5% (35)	3.1% (1,830)
165	Inflammatory conditions of male genital organs	0.8% (2)	0.0% (0)	0.3% (153)
166	Other male genital disorders	1.6% (4)	0.6% (6)	0.5% (313)
167	Nonmalignant breast conditions	1.2% (3)	0.3% (3)	0.2% (124)
168	Inflammatory disease of female pelvic organs	1.6% (4)	0.8% (8)	0.6% (354)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
169	Endometriosis	0.0% (0)	0.0% (0)	0.0% (9)
171	Menstrual disorders	5.4% (13)	1.5% (15)	1.0% (602)
172	Ovarian cyst	0.0% (0)	0.2% (2)	0.1% (51)
173	Menopausal disorders	0.0% (0)	0.0% (0)	0.0% (12)
174	Female infertility	0.0% (0)	0.0% (0)	0.0% (2)
175	Other female genital disorders	3.3% (8)	1.1% (11)	0.5% (277)
Complications of pregnancy; childbirth; and the puerperium (total)		8.6% (21)	4.0% (40)	2.4% (1,415)
176	Contraceptive and procreative management	8.6% (21)	3.4% (34)	1.6% (972)
177	Spontaneous abortion	0.0% (0)	0.0% (0)	0.0% (19)
178	Induced abortion	0.0% (0)	0.0% (0)	0.0% (4)
179	Postabortion complications	0.0% (0)	0.0% (0)	0.0% (4)
181	Other complications of pregnancy	0.4% (1)	0.2% (2)	0.3% (172)
182	Hemorrhage during pregnancy, abruptio placenta, placenta previa	0.0% (0)	0.0% (0)	0.1% (53)
183	Hypertension complicating pregnancy, childbirth and the puerperium	0.0% (0)	0.0% (0)	0.0% (16)
184	Early or threatened labor	0.0% (0)	0.0% (0)	0.1% (78)
185	Prolonged pregnancy	0.0% (0)	0.1% (1)	0.1% (30)
186	Diabetes or abnormal glucose tolerance complicating pregnancy, childbirth, or the puerperium	0.0% (0)	0.0% (0)	0.0% (11)
187	Malposition, malpresentation	0.0% (0)	0.0% (0)	0.0% (20)
188	Fetopelvic disproportion, obstruction	0.0% (0)	0.0% (0)	0.0% (8)
189	Previous C-section	0.0% (0)	0.0% (0)	0.0% (2)
190	Fetal distress and abnormal forces of labor	0.0% (0)	0.0% (0)	0.1% (32)
191	Polyhydramnios and other problems of amniotic cavity	0.0% (0)	0.0% (0)	0.0% (25)
192	Umbilical cord complication	0.0% ()	0.0% (0)	0.0% (8)
193	Trauma to perineum and vulva	0.0% (0)	0.1% (1)	0.1% (61)
194	Forceps delivery	0.0% (0)	0.0% (0)	0.0% (5)
195	Other complications of birth, puerperium affecting management of the mother	0.0% (0)	0.3% (3)	0.3% (177)
196	Normal pregnancy and/or delivery	0.4% (1)	0.4% (4)	0.8% (482)
Diseases of the skin and subcutaneous tissue (total)		16.5% (40)	10.4% (105)	9.1% (5,444)
197	Skin and subcutaneous tissue infections	7.4% (18)	3.9% (39)	3.2% (1,915)
198	Other inflammatory condition of skin	2.9% (7)	0.6% (6)	0.6% (375)
199	Chronic ulcer of skin	0.0% (0)	0.0% (0)	0.0% (9)
200	Other skin disorders	8.2% (20)	6.8% (69)	5.9% (3,524)
Diseases of the musculoskeletal system and connective tissue (total)		18.1% (44)	9.0% (91)	7.6% (4,533)
201	Infective arthritis and osteomyelitis (except that caused by tuberculosis and sexually transmitted d	0.0% (0)	0.0% (0)	0.0% (29)
202	Rheumatoid arthritis and related disease	0.0% (0)	0.2% (2)	0.1% (38)
203	Osteoarthritis	0.0% (0)	0.0% (0)	0.0% (7)
204	Other non-traumatic joint disorders	6.6% (16)	2.3% (23)	2.7% (1,632)
205	Spondylosis, intervertebral disc disorders, other back problems	4.5% (11)	2.2% (22)	1.7% (1,030)
206	Osteoporosis	0.4% (1)	0.0% (0)	0.0% (5)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
207	Pathological fracture	0.0% (0)	0.1% (1)	0.0% (12)
208	Acquired foot deformities	2.1% (5)	0.3% (3)	0.3% (196)
209	Other acquired deformities	0.4% (1)	0.5% (5)	0.4% (224)
210	Systemic lupus erythematosus and connective tissue disorders	0.0% (0)	0.1% (1)	0.0% (9)
211	Other connective tissue disease	5.4% (13)	3.7% (37)	2.6% (1,540)
212	Other bone disease and musculoskeletal deformities	2.1% (5)	0.8% (8)	1.1% (627)
Congenital anomalies (total)		5.8% (14)	4.9% (49)	2.7% (1,585)
213	Cardiac and circulatory congenital anomalies	0.4% (1)	0.7% (7)	0.5% (298)
214	Digestive congenital anomalies	0.0% (0)	0.2% (2)	0.1% (76)
215	Genitourinary congenital anomalies	1.2% (3)	0.7% (7)	0.5% (294)
216	Nervous system congenital anomalies	0.8% (2)	0.4% (4)	0.2% (135)
217	Other congenital anomalies	3.7% (9)	3.2% (32)	1.5% (877)
Certain conditions originating in the perinatal period (total)		0.8% (2)	1.5% (15)	0.4% (227)
218	Liveborn	0.0% (0)	0.1% (1)	0.0% (15)
219	Short gestation, low birth weight, and fetal growth retardation	0.4% (1)	0.4% (4)	0.2% (94)
220	Intrauterine hypoxia and birth asphyxia	0.4% (1)	0.0% (0)	0.0% (5)
221	Respiratory distress syndrome	0.4% (1)	0.0% (0)	0.0% (5)
222	Hemolytic jaundice and perinatal jaundice	0.0% (0)	0.1% (1)	0.0% (6)
223	Birth trauma	0.0% (0)	0.2% (2)	0.0% (9)
224	Other perinatal conditions	0.4% (1)	0.8% (8)	0.2% (122)
Symptoms; signs; and ill-defined conditions and factors influencing health status (total)		100.0% (247)	86.9% (876)	66.1% (39,487)
245	Syncope	2.1% (5)	0.4% (4)	0.4% (220)
246	Fever of unknown origin	1.6% (4)	4.1% (41)	5.0% (2,983)
247	Lymphadenitis	0.4% (1)	1.0% (10)	0.8% (505)
248	Gangrene	0.0% (0)	0.0% (0)	0.0% (1)
250	Nausea and vomiting	3.7% (9)	1.8% (18)	2.2% (1,302)
251	Abdominal pain	10.7% (26)	3.3% (33)	4.4% (2,612)
252	Malaise and fatigue	0.4% (1)	1.7% (17)	1.0% (589)
253	Allergic reactions	8.2% (20)	9.0% (91)	7.1% (4,241)
254	Rehabilitation care, fitting of prostheses, and adjustment of devices	2.5% (6)	0.6% (6)	0.4% (224)
255	Administrative/social admission	93.4% (227)	77.5% (781)	54.9% (32,792)
256	Medical examination/evaluation	20.2% (49)	9.0% (91)	4.1% (2,474)
257	Other aftercare	11.9% (29)	3.5% (35)	1.5% (890)
258	Other screening for suspected conditions (not mental health disorders or infectious disease)	9.5% (23)	7.9% (80)	4.6% (2,732)
Injury and poisoning (total)		40.3% (98)	29.4% (296)	23.2% (13,821)
225	Joint disorders and dislocations, trauma-related	2.5% (6)	0.8% (8)	1.0% (604)
226	Fracture of neck of femur (hip)	0.0% (0)	0.0% (0)	0.0% (11)
227	Spinal cord injury	0.0% (0)	0.1% (1)	0.0% (15)
228	Skull and face fractures	0.0% (0)	0.1% (1)	0.1% (82)
229	Fracture of upper limb	2.9% (7)	1.6% (16)	2.0% (1,220)
230	Fracture of lower limb	1.2% (3)	1.7% (17)	0.7% (445)
231	Other fractures	0.8% (2)	0.3% (3)	0.2% (97)

CCS	CCS Description	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
232	Sprains and strains	11.9% (29)	3.9% (39)	4.0% (2,361)
233	Intracranial injury	0.8% (2)	0.5% (5)	0.4% (245)
234	Crushing injury or internal injury	0.8% (2)	0.1% (1)	0.2% (113)
235	Open wounds of head, neck, and trunk	3.3% (8)	3.7% (37)	2.9% (1,714)
236	Open wounds of extremities	5.8% (14)	2.8% (28)	2.0% (1,186)
237	Complication of device, implant or graft	0.0% (0)	0.2% (2)	0.1% (56)
238	Complications of surgical procedures or medical care	1.6% (4)	0.6% (6)	0.3% (168)
239	Superficial injury, contusion	11.9% (29)	7.2% (73)	6.4% (3,842)
240	Burns	0.8% (2)	0.8% (8)	0.5% (307)
241	Poisoning by psychotropic agents	0.0% (0)	0.2% (2)	0.1% (30)
242	Poisoning by other medications and drugs	3.3% (8)	0.5% (5)	0.4% (209)
243	Poisoning by nonmedicinal substances	0.8% (2)	1.3% (13)	0.5% (316)
244	Other injuries and conditions due to external causes	17.7% (43)	12.0% (121)	8.0% (4,800)

Appendix 5: Utilization of Medications

REDBOOK™ was used to aggregate National Drug Code (NDC) on the pharmacy claims into meaningful therapeutic categories to develop reporting and analysis. The table below reports the rate of days supply per member per year by therapeutic class. The count of children using any medication in the therapeutic class is given in parentheses.

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Total	777 (239)	270 (864)	113 (43,610)
Antiasthmatics (total)	28 (54)	20 (204)	13 (8,900)
Asthma - Controller Medications	19 (30)	12 (99)	8 (4,180)
Asthma - Sympathomimetic Agents	9 (43)	8 (185)	5 (7,911)
Antihistamines	22 (41)	10 (114)	6 (4,765)
Anti-Infectives (total)	28 (131)	14 (531)	9 (27,298)
Anti-Infective - Antibiotics	21 (119)	11 (503)	8 (25,999)
Anti-Infective - Antivirals	3 (5)	1 (7)	0 (399)
Anti-Infective - Antifungals	0 (7)	0 (22)	0 (395)
Anti-Infective - Other	3 34)	2 (64)	1 (2,906)
Antineoplastic Agents	0 (0)	0 (3)	0 (60)
Autonomic - Vascular for Migraines	0 (2)	0 (6)	0 (226)
Autonomic - Other	3 (21)	1 (31)	1 (1,468)
Blood Form./Coagulation Agents	2 (5)	0 (3)	0 (279)
Cardiovascular Agents (total)	55 (54)	19 (84)	6 (1,738)
Cardiovascular - Antihyperlipidemic	0 (0)	0 (1)	0 (35)
Cardiovascular - ACE Inhibitors	0 (0)	0 (0)	0 (72)
Cardiovascular - Beta Blockers	4 (6)	0 (3)	0 (137)
Cardiovascular - Calcium Channel Blockers	0 (0)	0 (0)	0 (43)
Cardiovascular - Antiarrythmics	0 (0)	0 (0)	0 (3)
Cardiovascular - Other	51 (49)	18 (78)	5 (1,454)
Cardiovascular - Diuretics	0 (0)	0 (2)	0 (70)
CNS - Non-Steroid / Anti-Inflamatory	3 (32)	1 (49)	1 (2,613)
CNS - Opiate Agonists	1 (45)	1 (92)	1 (5,571)
CNS - Anticonvulsants	73 (56)	12 (40)	4 (1,108)
CNS - Psych Antidepressants	98 (95)	26 (122)	7 (2,644)
CNS - Psych Tranquilizers/Antipscyhotics	162 (111)	30 (102)	5 (1,278)
CNS - Stimulants	72 (59)	40 (146)	17 (4,427)
CNS - Anxiolytic, Sedatives, Hypnotics	10 (27)	1 (32)	1 (1,150)
CNS - Other Central Nervous System Agents	33 (46)	14 (80)	3 (1,871)
Antidiabetics (total)	5 (2)	2 (4)	2 (297)
Diabetes - Diagnostic Agents	2 (1)	1 (4)	1 (197)
Diabetes - Antidiabetic Agents Insulin	2 (1)	1 (2)	1 (172)
Diabetes - Antidiabetic Agents Other	1 (2)	1 (3)	0 (208)
Ear, Nose, & Throat Prep	14 (49)	5 (193)	4 (9,138)
Gastrointestinal Drugs	36 (42)	6 (53)	3 (1,877)
Hormones & Synthetic - Contraceptive Oral	39 (48)	12 (64)	5 (1,888)

	Residential Placement	Family Foster Care	Low-Income Medicaid Comparison Group
Combination			
Hormones & Synthetic - Estrogens	1 (3)	0 (4)	0 (171)
Hormones & Synthetic - Other	24 (50)	7 (108)	3 (5,006)
Immunosuppresants	0 (0)	0 (0)	0 (30)
Skin & Mucous Membrane Agents	13 (83)	7 (240)	5 (10,440)
Smooth Muscle Relaxants	3 (4)	1 (7)	0 (160)

Appendix 6: Payments by Medicaid Category of Service

	Payments			Payments PMPM		
Medicaid Categories of Service	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**	**Residential Placement**	**Family Foster Care**	**Low-Income Medicaid Comparison Group**
Total: All Services	$9,954,968	$12,327,179	$126,116,664	$3,415	$1,020	$176
Total: Services Used by All Children Covered by Medicaid	$2,352,414	$4,462,362	$101,661,835	$807	$369	$142
Total: Services Used Primarily by Special Populations Covered by Medicaid	$7,602,554	$7,864,817	$24,454,829	$2,608	$651	$34
Services Used by All Children Covered by Medicaid						
Inpatient Hospital, General	$190,699	$171,492	$4,941,712	$65	$14	$7
Inpatient Psychatric Facility Services Under Age 22	$329,114	$134,812	$1,361,176	$113	$11	$2
Skilled Nursing Facility Nursing Home	$26,254	$0	$686,964	$9	$0	$1
Furnished Medical Supplies Or Durable Medical Equipment	$27,248	$91,508	$1,973,658	$9	$8	$3
Optometric Services Eyeglasses	$8,001	$16,340	$491,119	$3	$1	$1
Outpatient Hospital, General	$195,650	$476,940	$17,181,398	$67	$39	$24
Physicians Services	$126,566	$316,660	$13,229,540	$43	$26	$18
Advanced Registered Nurse Practitioner	$1,362	$8,700	$72,634	$0	$1	$0
Laboratory (Pathology)	$9,627	$9,790	$238,435	$3	$1	$0
X-Ray Services	$970	$1,254	$39,247	$0	$0	$0
Family Planning Services	$471	$2,320	$82,607	$0	$0	$0
Audiology Services	$309	$248	$23,068	$0	$0	$0
Physical Therapy	$2,562	$8,259	$275,885	$1	$1	$0
Speech Therapy	$0	$2,056	$52,147	$0	$0	$0
Occupational Therapy	$522	$9,605	$98,371	$0	$1	$0
Podiatrist Services	$703	$1,672	$48,994	$0	$0	$0
Medical Services Clinic	$0	$3,412	$159,504	$0	$0	$0
Chiropractic	$99	$281	$24,797	$0	$0	$0
Rural Health Clinic	$22,106	$97,211	$3,730,382	$8	$8	$5
Dispense Prescribed Drugs	$679,514	$847,580	$18,220,971	$233	$70	$25
Mental Health Center	$484,649	$1,547,397	$22,221,688	$166	$128	$31
Psychology	$127,602	$287,991	$1,816,822	$44	$24	$3
Ambulance Service	$13,788	$12,568	$283,625	$5	$1	$0
Wheelchair Van	$0	$0	$23,196	$0	$0	$0
Dental Service	$102,350	$286,089	$12,364,405	$35	$24	$17
Home Health Services	$2,249	$38,850	$882,244	$1	$3	$1
Private Duty Nursing	$0	$89,326	$1,137,244	$0	$7	$2
Services Used Primarily by Special Populations Covered by Medicaid						
Private Non-Medical Institutional For Children	$5,895,719	$1,435,334	$122,787	$2,023	$119	$0
Icf Services For The Mentally Retarded	$201,912	$0	$1,966,236	$69	$0	$3
Child Health Support Service	$104,994	$907,687	$58,278	$36	$75	$0
Placement Services	$710,537	$2,897,061	$5,308	$244	$240	$0
Clinic Services (Primarily Special Education)	$296,549	$605,054	$13,941,117	$102	$50	$19
Crisis Intervention	$9,301	$14,937	$0	$3	$1	$0
Day Habilitation Center	$2,775	$433,412	$5,026,698	$1	$36	$7
Home & Community Based Care, Developmentally Impaired	$4,075	$604,518	$1,454,682	$1	$50	$2
Home & Community Based Care, Elderly & Chronically Ill	$0	$0	$1,629	$0	$0	$0
Intensive Home And Community Services	$272,480	$490,153	$909,324	$93	$41	$1
Home Based Therapy	$104,213	$476,662	$968,771	$36	$39	$1

REFERENCES

[1] Geen R, Sommers A, Cohen M. Medicaid Spending on Foster Children. Urban Institute. Child Welfare Research Program. Brief Number 2, August, 2005.
http://www.urban.org/UploadedPDF/311221_medicaid_spending.pdf

[2] American Academy of Pediatrics. Developmental Issues for Young Children in Foster Care Committee on Early Childhood, Adoption and Dependent Care.
Pediatrics Vol. 106 No. 5 November 2000, pp. 1145-1150.
http://aappolicy.aappublications.org/cgi/content/full/pediatrics;106/5/1145

[3] Leslie LK, Hurlburt MS, Landsverk J, et al. Comprehensive assessments for children entering foster care: A national perspective. Pediatrics. 2003;112(1):134-142.
http://pediatrics.aappublications.org/cgi/content/abstract/112/1/134

[4] Simms MD, Dubowitz H, Szilagyi MA. Health care needs of children in the foster care system. Pediatrics. 2000;106:909-918. http://pediatrics.aappublications.org/cgi/content/abstract/106/4/S1/909.

[5] Halfon N, Mendonca A, Berkowitz G. Health status of children in foster care. The experience of the Center for the Vulnerable Child. Arch Pediatr Adolesc Med. 1995;149:386-392.
http://archpedi.ama-assn.org/cgi/content/abstract/149/4/386.

[6] Szilagyi, M. The pediatrician and the child in foster care, Pediatrics in Review. 1998;19:39-50.
http://pedsinreview.aappublications.org/cgi/content/extract/19/2/39

[7] The Adverse Childhood Experiences Study. The Effects of Adverse Childhood Experiences on Adult Health and Well Being. http://www.acestudy.org/

[8] Felitti VJ, Anda RF, Nordenberg D, et al. The relationship of adult health status to childhood abuse and household dysfunction. American Journal of Preventive Medicine. 1998;14:245-258.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9635069

[9] Facts For Families, The Adopted Child. American Academy of Child and Adolescent Psychiatry.
http://www.aacap.org/cs/root/facts_for_families/the_adopted_child

[10] Division for Children, Youth, and Families. New Hampshire Department of Health and Human Services.
http://www.dhhs.nh.gov/DHHS/DCYF/default.htm

[11] Health of New Hampshire's Foster Children. GK Kantor, K Becker-Blease, S Rochon. Family Research Laboratory & Crimes Against Children Research Center. University of New Hampshire. 2007.

[12] Children's Health Insurance Programs in New Hampshire: Access, Prevention, Care Management, Utilization, and Payments. State Fiscal Year 2007. Report prepared for the New Hampshire Department of Health and Human Services by the Maine Health Information Center. August 2008.

[13] Clinical Classifications Software (CCS) for ICD-9-CM. Agency for Healthcare Research and Quality (AHRQ).The Healthcare Cost and Utilization Project.
http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp#download

[14] 3M™ Clinical Risk Grouping (CRG) Software for Healthcare Reimbursement
http://solutions.3m.com/wps/portal/3M/en_US/3M_Health_Information_Systems/HIS/Products/CRG/

[15] Children's Health, the Nation's Wealth: Assessing and Improving Child Health. Report Brief, 2004.
http://www.iom.edu/Object.File/Master/23/164/0.pdf.

[16] JM Zito, DJ Safer, D Sai, JF Gardner, D Thomas, P Coombes, M Dubowski, M Mendez-Lewis. Medication Patterns Among Youth in Foster Care
Pediatrics Vol. 121 No. 1 January 2008, pp. e157-e163

[17] Rubin DM, O'Reilly AL, Xianqun Luan, et al. The impact of placement stability on behavioral well-being for children in foster care. Pediatrics. 2007;119(2): 336-344.
http://pediatrics.aappublications.org/cgi/content/short/119/2/336

[18] Rubin DM, Alessandrini EA, Feudtner C, et al. Placement stability and mental health costs for children in foster care. Pediatrics. 2004;113(5):1336-1341.
http://pediatrics.aappublications.org/cgi/content/abstract/113/5/1336?etoc.